patients who may be treated in the outpatient setting with oral antimicrobials from patients in whom hospitalization and parenteral therapy is appropriate. Over the past decade, dramatic escalation in antimicrobial resistance among common respiratory pathogens poses obstacles to antibiotic choices. We review the microbiology of community-acquired pneumonia, and the therapeutic strategies that are clinically and cost effective.

Lyon W.R. et al. *A role for trigger factor and an rgg-like regulator in the transcription, secretion and processing of the cysteine proteinase of Streptococcus pyogenes.* EMBO J. 1998; 17(21) : 6263-75.p Abstract: The ability of numerous microorganisms to cause disease relies upon the highly regulated expression of secreted proteinases. In this study, mutagenesis with a novel derivative of Tn4001 was used to identify genes required for the expression of the secreted cysteine proteinase (SCP) of the pathogenic Gram-positive bacterium Streptococcus pyogenes. Designated as Rop loci (regulation of proteinase), ropB is a rgg-like transcriptional activator required for transcription of the gene which encodes the proteinase. In contrast, ropA contributes post-transcriptionally to the secretion and processing of SCP and encodes a homologue of Trigger Factor, a peptidyl-prolyl isomerase and putative chaparone which is highly conserved in most bacterial species, but of unknown function. Analysis of additional ropA mutants demonstrated that RopA acts both to assist in targeting SCP to the secretory pathway and to promote the ability of the proprotein to establish an active conformation upon secretion. This latter function was dependent upon the peptidyl-prolyl isomerase domain of RopA and mutants that lacked this domain exhibited a bipartite deficiency manifested as a kinetic defect in autologous processing of the proprotein to the mature proteinase, and as a catalytic defect in the mature proteinase. These results provide insight into the function of Trigger Factor, the regulation of proteinase activity and the mechanism of secretion in Gram-positive bacteria.

Lysenko E.S. et al. *Bacterial phosphorylcholine decreases susceptibility to the antimicrobial peptide LL-37/hCAP18 expressed in the upper respiratory tract.* Infect Immun. 2000; 68(3) : 1664-71.p Abstract: A number of pathogens of the upper respiratory tract express an unusual prokaryotic structure, phosphorylcholine (ChoP), on their cell surface. We tested the hypothesis that ChoP, also found on host membrane lipids in the form of phosphatidylcholine, acts so as to decrease killing by antimicrobial peptides that target differences between bacterial and host membranes. In Haemophilus influenzae, ChoP is a phase-variable structure on the oligosaccharide portion of the lipopolysaccharide (LPS). There was a bactericidal effect of the peptide LL-37/hCAP18 on a nontypeable H. influenzae strain, with an increasing selection for the ChoP(+) phase as the concentration of the peptide was raised from 0 to 10 microgram/ml. Moreover, constitutive ChoP-expressing mutants of unrelated strains showed up to 1,000-fold-greater survival compared to mutants without ChoP. The effect of ChoP on resistance to killing by LL-37/hCAP18 was dependent on the salt concentration and was observed only when bacteria were grown in the presence of environmental choline, a requirement for the expression of ChoP on the LPS. Further studies established that there is transcription of the LL-37/hCAP18 gene on the epithelial surface of the human nasopharynx in situ and inducible transcription in epithelial cells derived from the upper airway. The presence of highly variable amounts of LL-37/hCAP18 in normal nasal secretions (<1.2 to >80 microgram/ml) was demonstrated with an antibody against this peptide. It was concluded that ChoP alters the bacterial cell surface so as mimic host membrane lipids and decrease killing by LL-37/hCAP18, an antimicrobial peptide that may be expressed on the mucosal surface of the nasopharynx in bactericidal concentrations.

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Macartney K.K. et al. *Nosocomial respiratory syncytial virus infections: the cost-effectiveness and cost-benefit of infection control.* Pediatrics. 2000; 106(3) : 520-6.p Abstract: OBJECTIVE: To determine the cost-effectiveness and cost-benefit of an infection control program to reduce nosocomial respiratory syncytial virus (RSV) transmission in a large pediatric hospital. DESIGN: RSV nosocomial infection (NI) was studied for 8 years, before and after intervention with a targeted infection control program. The cost-effectiveness of the intervention was calculated, and cost-benefit was estimated by a case-control comparison. SETTING: Children's Hospital of Philadelphia, a 304-bed pediatric hospital. PATIENTS: All inpatients with RSV infection, both community- and hospital-acquired. INTERVENTION: Consisted of early recognition of patients with respiratory symptoms, confirmation of RSV infection by laboratory testing, establishing cohorts of patients and nursing staff, gown and glove barrier precautions, and monitoring and education of staff. OUTCOME MEASURES: The incidence density of RSV NI before and after the intervention was calculated as the rate per 1000 patient days-at-risk for infection. Intervention costs included laboratory testing, isolation, and administration of the program. The cost of RSV NI was estimated by comparing hospital charges for 30 cases and matched uninfected controls. RESULTS: A total of 148 patients acquired NI (88 before and 60 after the intervention). The Mantel-Haenszel stratified relative risk for NI in the period before the infection control program, compared with the postintervention period, was.61 (95% confidence interval:.53-.69). By applying the preintervention stratum-specific rates of infection to the days-at-risk in the postintervention period, an estimated 100 NIs would have been expected, which in comparison to the 60 NIs observed, yielded an estimated program effectiveness of 10 RSV NIs prevented per season. The total cost of the program per season was $15 627 or $1,563/NI prevented. In comparison, the mean cost to the hospital was $9,419/case of RSV NI, resulting in a cost-benefit ratio of 1:6. CONCLUSIONS: A targeted infection control intervention was cost-effective in reducing the rate of RSV NI. For every dollar spent on the program, approximately $6 was saved.

Macdonald S. et al. *Comparison of technical success and outcome of tunneled catheters inserted via the jugular and subclavian approaches.* J Vasc Interv Radiol. 2000; 11(2 Pt 1) : 225-31.p Abstract: PURPOSE: To compare the technical success and immediate and long-term outcomes of tunneled central venous catheters placed in comparative cohorts via the subclavian vein (SCV) and the internal jugular vein (IJV) routes. MATERIALS AND METHODS: This was a prospective observational single-center study of consecutive procedures. Between November 1993 and June 1995, 99 catheters were placed via the SCV and between December 1997 and July 1998, 109 catheters were placed via the IJV. Procedural data were recorded in both cohorts by completion of a proforma by the primary operator. RESULTS: Follow-up data were available in 96% of the SCV and 87% of the IJV cohorts. The average procedure time was significantly shorter in the IJV group and technical success was 100% versus 97% in the SCV group, but this did not reach statistical significance. The procedure-related pneumothorax rate and the rate of symptomatic venous thrombosis were significantly lower in the IJV cohort (P =.023, P =.015). Fewer catheters were removed prematurely due to sepsis in the IJV group (P =.043). CONCLUSIONS: The IJV route is associated with comparable technical success, and lower major procedural complication and venous thrombosis rates, with fewer catheters removed prematurely. The right IJV approach with ultrasound guidance is recommended as the route of choice for the placement of tunneled central venous catheters.

MacGowan A. et al. *External quality assessment of the serum bactericidal test: results of a methodology/interpretation questionnaire.* J Antimicrob Chemother. 1997; 39(2) : 277-84.p Abstract: Two hundred micro-

biology laboratories in the UK took part in two separate experimental external quality assessment distributions related to the serum bactericidal test (SBT). In the first, Staphylococcus aureus NCTC 6571 (vancomycin MIC 1 mg/L), was tested against a human serum containing vancomycin 38 mg/L plus gentamicin 0.5 mg/L. In the second, Streptococcus oralis PAJ 112/4183 (penicillin MBC < or = 0.03 mg/L) and Streptococcus sanguis PAJ 107/4184 (penicillin MBC = 128 mg/L) were tested against human serum containing penicillin 15 mg/L. Respondents returned their laboratory results and a questionnaire on clinical interpretation and technical aspects. Most laboratories (194/199, 97.5%) recommend the use of the SBT in the management of infective endocarditis but only 48 (25.2%) often or always change therapy on the basis of the result. A wide range of interpretative criteria, definitions of bactericidal endpoints and methodologies are used. Performance in the first distribution was acceptable for 75% of laboratories but in the second only 34% could identify penicillin tolerance; 34 respondents reported an SBT result of < or = 2 for the tolerant strain, 81 laboratories reported one of > or = 16. Technical factors related to acceptable performance were: sonication of broth before counting the inoculum; knowing the inoculum size in cfu/mL; use of a 4-8 h broth culture to make the inoculum; incubation of recovery plates for > 36 h; use of a calibrated pipette to sample for surviving bacteria; use of measured volumes to add the inoculum. Use of uncalibrated pipettes or standard loops to recover survivors was related to poor performance. Microbiology departments in the UK should review the clinical need to perform the SBT in the light of their local circumstances and if they elect to continue to offer this test, revise their methodologies which could be producing misleading results when testing alpha-haemolytic streptococci.

MacGowan A.P. *Pharmacodynamics, pharmacokinetics, and therapeutic drug monitoring of glycopeptides.* Ther Drug Monit. 1998; 20(5) : 473-7.p Abstract: The glycopeptide antibacterial drugs, vancomycin and teicoplanin, are widely used in hospitals for therapy of severe or multiresistant infection that has a positive results on Gram's stain test. Although vancomycin resistance is common in some hospital-acquired Enterococcus sp and resistance to teicoplanin occurs among Staphylococci sp glycopeptides remain the cornerstone of therapy for infection due to methicillin-resistant Staphylococcus aureus (MRSA), coagulase-negative Staphylococcus organisms, and infection related to implanted devices. Therapeutic drug monitoring (TDM) of these agents remains controversial, but advances in our understanding of their pharmacodynamics and further clinical studies are helping clarify the situation. In the future, a more rational approach to monitoring will probably result in less intensive monitoring of vancomycin but more intensive monitoring of teicoplanin.

MacIntyre P.A. et al. *Preliminary experience with the Doppler ultrasound guided vascular access needle in paediatric patients.* Paediatr Anaesth. 2000; 10(4) : 361-5.p Abstract: Percutaneous cannulation of the internal jugular vein (IJV) in infants and children may be technically difficult and can lead to complications. Various techniques exist to achieve successful cannulation and to reduce the rate of complications. We report the use of the Doppler ultrasound guided vascular access needle (the SMART needle) for IJV cannulation in 10 infants and young children (mean age 3.7 months) weighing less than 10 kg (mean weight 5.5 kg) who were to undergo cardiac surgery at Great Ormond Street Hospital for Children. Successful cannulation was achieved in six out of 10 patients with haematoma complicating the procedure in two patients. We believe this is the first reported use of this device for cannulation of the IJV in this patient group.

Mader J.T. et al. *Antimicrobial treatment of chronic osteomyelitis.* Clin Orthop. 1999; (360) : 47-65.p Abstract: Chronic osteomyelitis has been a difficult problem for patients and the treating physicians. Appropriate antibiotic therapy is necessary to arrest osteomyelitis along with adequate surgical therapy. Factors involved in choosing the appropriate antibiotic(s) include infection type, infecting organism, sensitivity results, host factors, and antibiotic characteristics. Initially, antibiotics are chosen on the basis of the organisms that are suspected to be causing the infection. Once the infecting organism(s) is isolated and sensitivities are established, the initial antibiotic(s) may be modified. In selecting specific antibiotics for the treatment of osteomyelitis, the type of infection, current hospital sensitivity resistance patterns, and the risk of adverse reactions must be strongly appraised. Antibiotic classes used in the treatment of osteomyelitis include penicillins, beta-lactamase inhibitors, cephalosporins, other beta-lactams (aztreonam and imipenem), vancomycin, clindamycin, rifampin, aminoglycosides, fluoroquinolones, trimethoprim-sulfamethoxazole, metronidazole, and new investigational agents including teicoplanin, quinupristin/dalfopristin, and oxazolidinones. Traditional treatments have used operative procedures followed by 4 to 6 weeks of parenteral antibiotics. Adjunctive therapy for treating chronic osteomyelitis may be achieved by using beads, spacers, or coated implants to deliver local antibiotic therapy and/or by using hyperbaric oxygen therapy (once per day for 90-120 minutes at two to three atmospheres at 100% oxygen).

Madhavi P. et al. *Unilateral pleural effusion complicating central venous catheterisation.* Arch Dis Child Fetal Neonatal Ed. 2000; 82(3) : F248-9.p Abstract: Acute respiratory distress developed in two preterm babies because of unilateral hydrothorax secondary to the migration of a central venous catheter into the pulmonary vasculature. Prompt recognition of the problem and rapid treatment are essential and life saving. This complication of intravenous alimentation catheters has not been previously reported in the neonatal age group.

Madjar S. et al. *Long-term follow-up of the in-flowtrade mark intraurethral insert for the treatment of women with voiding dysfunction.* Eur Urol. 2000; 38(2) : 161-6.p Abstract: OBJECTIVE: The aim of the current study is to report the long-term follow-up of women treated with the In-Flowtrade mark device for periods longer than 1 year. Abstract METHODS: The efficacy of the intraurethral insert was evaluated in 92 women. Data regarding their urodynamic diagnosis, complications and satisfaction were collected. RESULTS: Early and late discontinuation of the device use was recorded in 52 patients (56.5%) and 19 patients (20.6%), respectively. Twenty-one patients (22.8%) are now being followed for more than 1 year with a follow-up time of 12-44 months (mean 24.6). Complications include device migration into the bladder (4 patients), asymptomatic bacteriuria (15 patients), and symptomatic urinary tract infections (4 cases, 1 of them pyelonephritis). In the 3 women who were sexually active before treatment, the use of the device did not preclude sexual intercourse, although mild dyspareunia was reported in 1 patient. Two patients complained of episodic inconvenience between their legs during walking. All patients were satisfied with the device and preferred it to previous treatment modalities used. The reasons for early and late discontinuation of treatment are described and discussed. CONCLUSIONS: The In-Flowtrade mark intraurethral insert can serve as a long-term treatment for the management of women with voiding difficulties. Women who continue treatment for a prolonged time are satisfied with the device use. Further studies comparing this treatment with other modalities are needed to support the role of the In-Flowtrade mark device in the management of women with voiding dysfunction.

Madrid V.V. et al. *Changes in the phage typing patterns of Staphylococcus aureus strains at Concepcion, Chile, in the last 30 years.* Microbios. 1999; 97(387) : 75-83.p Abstract: Staphylococcus aureus is a ubiquitous pathogen still implicated as a common cause of community- and hospital-acquired infections. This micro-organism has demonstrated an immense adapting capacity to rapid environmental changes. In recent years, multiresistant strains have caused increasing nosocomial infections in several parts of the world. In the period 1993-94, 455 clinical isolates were typed on the basis of traditional phage typing procedure and these data were compared with others from similar studies carried out at the Department of Microbiology, University of Concepcion in 1960, 1972, and 1982. Throughout the years, phage

groups have been shifting from group I to group III and examination of phage types show that types 80 and 80/81 which were the most virulent and resistant by the 1960s, had disappeared. Nowadays, types 75 and 54/75 are most frequently found, and these have been associated with methicillin-resistant S. aureus.

Maeda K. et al. *[A clinical study of respiratory infection isolating non-pathogenic Neisseria by transtracheal aspiration].* Kansenshogaku Zasshi. 1998; 72(11) : 1171-5.p Abstract: Neisseria species other than N. meningitidis and N. gonorrhoeae are generally regarded as commensal bacterial flora of the oropharynx, and little is known regarding cases of these non-pathogenic Neisseria species in the lower respiratory tract. We clinically examined respiratory tract infections from which non-pathogenic Neisseria species were isolated by transtracheal aspiration (TTA). The incidence of non-pathogenic Neisseria isolated was 54 (15.7%) out of 344 episodes of respiratory tract infections with isolated microorganisms from TTA, and was 17.6%, 15.8%, 14.3% for pneumonia, acute bronchitis, and chronic lower respiratory tract infection, respectively. All 54 episodes were isolated with other microorganisms such as alpha-Streptococcus spp. (75.9%), Haemophilus influenzae (25.9%) and anaerobics (22.2%). The isolation ratio according to the age group increased at 45 years of age or more, but did not increase with the advance of age. Predisposing factors were identified such as overt aspiration, iatrogenic procedure and heavy smoking. Cases without overt aspiration that had fevers of 38 degrees C or more or hypoxemia of less than PaO2 70 torr when detecting non-pathogenic Neisseria were observed more frequently in the aged than the non-aged. The findings suggest the detection of non-pathogenic Neisseria by TTA is influenced by the host state that the fall of microorganisms from the upper to lower respiratory tract cannot be defended or excluded by mucociliary transportation disorder due to underlying disease and smoking, or deterioration of physical status other than overt or silent aspiration.

Maguire G.P. et al. *Clinical experience and outcomes of community-acquired and nosocomial methicillin-resistant Staphylococcus aureus in a northern Australian hospital.* J Hosp Infect. 1998; 38(4) : 273-81.p Abstract: Methicillin-resistant Staphylococcus aureus (MRSA) is a well-recognized cause of hospital-acquired sepsis. We reviewed the clinical features of a new variant of community-acquired MRSA originally described from the Kimberley region of northern Western Australia (WA MRSA). This strain has become an increasing cause of community- and hospital-acquired sepsis at Royal Darwin Hospital (RDH) in the Northern Territory, especially in Aboriginal Australians from remote communities. Fifty percent of WA MRSA was community-acquired, with 76% in Aboriginals. Like the MRSA from eastern Australia (EA MRSA), WA MRSA commonly caused skin sepsis but was less likely to cause respiratory or urinary infections compared with EA MRSA. Twelve out of 125 (9.6%) WA MRSA and 7/93 (7.5%) EA MRSA infections were septicaemias. Septicaemia due to WA MRSA occurred in adult medical patients, especially those with temporary haemodialysis catheters, while EA MRSA septicaemia occurred throughout the hospital. Aboriginal people were more likely to develop both community- and hospital-acquired WA MRSA septicaemia [overall relative risk (RR) 12.3 (95% CI 3.7-40.7)]. Control of WA MRSA requires policies to reduce transmission in both hospitals and communities. Community-based control programmes need support for individual patient management, improved housing and hygiene, control of skin sepsis and appropriate use of antibiotics, especially in rural Aboriginal communities in northern Australia.

Maguire H. et al. *Hospital outbreak of Salmonella virchow possibly associated with a food handler.* J Hosp Infect. 2000; 44(4) : 261-6.p Abstract: A foodborne outbreak of salmonella infection at a private hospital in London in 1994 was found to be associated with eating turkey sandwiches prepared by a food handler. One patient, nine staff, and a foodhandler's baby were confirmed to have Salmonella enterica serotype virchow, phage type 26 infection. The attack rate was estimated to be 5% among the approximately 200 patients and staff at risk. A food handler reportedly became ill days after, but her baby days before, the first hospital case. Although it appeared to be a single outbreak, antibiogram analysis, supplemented by plasmid profile typing, demonstrated that there were two strains of S. virchow involved, one with resistance to sulphonamides and trimethoprim and a second sensitive to these antimicrobial drugs. Mother and child had different strains. The investigation demonstrated the importance of full phenotypic characterization of putative outbreak strains including antimicrobial susceptibility testing. Outbreaks of foodborne infection in hospitals are preventable and are associated with high attack rates and disruption of services. There is a need for good infection control policies and training of all staff involved in patient care as well as in catering services. Consultants in Communicable Disease (CCDCs) should include private hospitals in their outbreak control plans. Good working relations between Infection Control Doctors (ICDs) in the private health sector and their local CCDCs are important if outbreaks are to be properly investigated. Copyright 2000 The Hospital Infection Society.

Mahieu L.M. et al. *Prediction of nosocomial sepsis in neonates by means of a computer-weighted bedside scoring system (NOSEP score).* Crit Care Med. 2000; 28(6) : 2026-33.p Abstract: OBJECTIVE: To develop an easy-to-use bedside scoring system, composed of clinical variables, hematologic variables, and risk factors of infection, to predict nosocomial sepsis in neonatal intensive care unit patients. SETTING: A neonatal intensive care unit in a university hospital, Antwerp, Belgium. PATIENTS: Over 2 yrs, we analyzed two groups of patients. First, we prospectively studied 104 episodes of presumed nosocomial sepsis in 80 neonates (derivation cohort), and then we retrospectively studied 50 episodes in 39 neonates (validation cohort). INTERVENTIONS: None. MEASUREMENTS AND MAIN RESULTS: We developed two versions of a scoring system to predict nosocomial sepsis in sick neonates. The first scoring system (NOSEP-1 score) was based on 15 clinical, 12 laboratory, and 17 historical variables potentially connected with infection; the second one (NOSEP-2 score) also included the culture results of central vascular catheters. Based on the odds ratios of all independent variables, an additive and weighted score was developed and validated in a cohort of 39 patients screened for nosocomial sepsis in the same center. The NOSEP-1 score consisted of three laboratory variables (C-reactive protein > or =14 mg/L, thrombocytopenia <150 x 10(9)/L, and neutrophil fraction >50%), one clinical factor (fever >38.2 degrees C [100.8 degrees F]), and one risk factor (parenteral nutrition for > or =14 days). The NOSEP-2 score consisted of the same variables plus catheter-hub and catheter insertion site colonization data. Receiver operating characteristic curve analysis demonstrated good predictor performance of the NOSEP-1 score (area under the curve [Az] = 0.82 +/- 0.04 [SEM]) and NOSEP-2 score (Az = 0.84 +/- 0.04, p <.05). We checked whether a complex computer-generated scoring system (CD-1 and CD-2 scores) based on the original numerical values of the items used in NOSEP-1 and NOSEP-2 would improve the prediction of nosocomial sepsis. The analysis showed the accuracy of bedside NOSEP-1 and NOSEP-2 scores to be comparable with the more cumbersome computer-generated CD-1 and CD-2 scores (receiver operating characteristic curve, Az: CD-1 score = 0.81 +/- 0.04, p =.69, and CD-2 score = 0.86 +/- 0.04, p =.96). Finally, in the validation cohort, we showed that the developed scoring system has a good prediction potential for nosocomial sepsis (Hosmer-Lemeshow goodness-of-fit test, chi2 [19] = 16.34, p >.75). CONCLUSIONS: The simple bedside scoring system NOSEP-1 composed of C-reactive protein, neutrophil fraction, thrombocytopenia, fever, and prolonged parenteral nutrition exposure provides a valuable tool for early identification of nosocomial sepsis. Its predictive power can be improved by adding central vascular catheter insertion site and hub colonization to the score.

Mahon B.E. et al. *Reported cholera in the United States, 1992-1994: a reflection of global changes in cholera epidemiology.* JAMA. 1996; 276(4) : 307-12.p Abstract: OBJECTIVE: To describe US cholera surveillance data from 1992 to 1994 and the domestic impact of the epidemics of Vibrio cholerae O1 in Latin America and V cholerae O139 in Asia. DESIGN, SETTING, AND PARTICIPANTS: Retrospective review of surveillance data from all cases of cholera reported to the Centers for Disease Control and Prevention (CDC) from January 1, 1992, through December 31, 1994, in the United States and its territories. MAIN OUTCOME MEASURES: Clinical, epidemiologic, and laboratory surveillance data. RESULTS: From 1992 through 1994, 160 cases of cholera were reported to CDC by 20 states and 1 territory. This is a marked increase: only 136 cases were reported from 1965 through 1991. Outbreaks affecting 75 passengers on an airplane from Latin America and 5 passengers on a cruise ship in Southeast Asia accounted for 50 percent of cases. Vibrio cholerae O139 caused 6 cases (4 percent). The proportion of V cholerae O1 isolates resistant to at least 1 antimicrobial agent rose from 3 percent in 1992 to 93 percent in 1994. Of 158 patients whose location of exposure was known, 151 (96 percent) acquired infection abroad (125 in Latin America, 26 in Asia). Of 105 persons whose reason for travel was known, 31 (30 percent) were US residents who had returned to their country of origin to visit family or friends, and 65 (62 percent) were non-US residents visiting the United States from cholera-affected countries. The cholera rate among persons arriving in the United States from cholera-affected regions was 0.27 case per 100000 air travelers, not substantially increased from earlier estimates. CONCLUSIONS: Cholera has increased in the United States since 1991, reflecting global changes in cholera epidemiology, and is now primarily travel associated and antimicrobial resistant. Most travelers were not traditional tourists; reaching them with prevention measures may be difficult. The risk of cholera to the individual traveler remains extremely low.

Mahony J.B. et al. *Detection of Chlamydia trachomatis, Neisseria gonorrhoeae, Ureaplasma urealyticum, and Mycoplasma genitalium in First-void Urine Specimens by Multiplex Polymerase Chain Reaction*. Mol Diagn. 1997; 2(3) : 161-168.p Abstract: Background: Sexually transmitted diseases are often caused by one or more microorganisms, and asymptomatic carriage and transmission may be of significance. Testing for more than one organism in a single assay could be a useful approach to laboratory diagnosis. Methods and Results: A multiplex polymerase chain reaction (PCR) assay was developed that employed specific primers targeted to the 7.5-kb cryptic plasmid of Chlamydia trachomatis, the cppB gene of the 4.2-kb cryptic plasmid of Neisseria gonorrhoeae, the 140-kd major adhesion protein gene of Mycoplasma genitlium, and the urease gene of Ureaplasma urealyticum. All four polymerase chain reaction products were detectable by agarose gel electorphoresis and were confirmed by Southern hybridization using fluorescein isothiocyanate-labeled oligonucleotide probes and enhanced chemiluminescent detection. Using purified DNA preparations, multiplex PCR had a reproducible detection limit of 1 fg of C. trachomatis DNA, 100 fg of N. gonorrhoeae DNA, and 10 fg U. urealyticum DNA and M. genitalium DNA, which converts to 1-2 genomic equivalents (ge) of C. trachomatis and N. gonorrhoeae, 4 ge of M. genitalium, and 10 ge U. urealyticum. Multiplex PCR was compared with individual uniplex polymerase chian reaction PCR assays by testing 117 first-void urine samples (91 men, 26 women) from Canadian or Kenyan patients. Multiplex PCR detected 45 of 46 (97.8%) urines with C. trachomatis DNA, 42 of 42 (100%) urines with N. gonorrhoeae DNA, 17 of 17 (100%) urines with U. urealyticum DNA, 4 of 4 (100%) urines with M. genitalium DNA, 12 of 12 urines that had DNA from two bacteria, and 2 of 2 urines with DNA from three bacteria. Multiplex PCR correctly identified bacteria in 92 of 93 urines for an overall sensitivity of 98.9%. Specificity calculations were 100% for C. trachomatis (71/71), N. gonorhoeae (75/75), U. urealyticum (100/100), and M. genitalium (113/113). Conclusions: Multiplex PCR provided a single sensitive and specific test for the detection of four bacteria in first-void urine samples. Testing of first-void urine samples by multiplex PCR could facilitate studies aimed at improving our understanding of the epidemiology of these important sexually transmitted diseases.

Maiden M.C. et al. *Multilocus sequence typing: a portable approach to the identification of clones within populations of pathogenic microorganisms.* Proc Natl Acad Sci U S A. 1998; 95(6) : 3140-5.p Abstract: Traditional and molecular typing schemes for the characterization of pathogenic microorganisms are poorly portable because they index variation that is difficult to compare among laboratories. To overcome these problems, we propose multilocus sequence typing (MLST), which exploits the unambiguous nature and electronic portability of nucleotide sequence data for the characterization of microorganisms. To evaluate MLST, we determined the sequences of approximately 470-bp fragments from 11 housekeeping genes in a reference set of 107 isolates of Neisseria meningitidis from invasive disease and healthy carriers. For each locus, alleles were assigned arbitrary numbers and dendrograms were constructed from the pairwise differences in multilocus allelic profiles by cluster analysis. The strain associations obtained were consistent with clonal groupings previously determined by multilocus enzyme electrophoresis. A subset of six gene fragments was chosen that retained the resolution and congruence achieved by using all 11 loci. Most isolates from hyper-virulent lineages of serogroups A, B, and C meningococci were identical for all loci or differed from the majority type at only a single locus. MLST using six loci therefore reliably identified the major meningococcal lineages associated with invasive disease. MLST can be applied to almost all bacterial species and other haploid organisms, including those that are difficult to cultivate. The overwhelming advantage of MLST over other molecular typing methods is that sequence data are truly portable between laboratories, permitting one expanding global database per species to be placed on a World-Wide Web site, thus enabling exchange of molecular typing data for global epidemiology via the Internet.

Majeed M. et al. *Roles of calcium and annexins in phagocytosis and elimination of an attenuated strain of Mycobacterium tuberculosis in human neutrophils.* Microb Pathog. 1998; 24(5) : 309-20.p Abstract: The phagocytic function of neutrophils is a crucial element in the host defence against invading microorganisms. We investigated phagocytosis and intracellular killing of an attenuated strain of Mycobacterium tuberculosis(H37Ra) by human neutrophils focusing on the role of the cytosolic free calcium concentration [Ca2+]i and certain cytosolic calcium-dependent membrane-binding proteins annexins. Phagocytic uptake did not trigger a calcium rise and occurred independently of different calcium conditions, and in a serum-dependent manner. Changes in the viability of H37Ra were determined by agar plate colony count and a radiometric assay. Neutrophils showed a capacity to kill ingested mycobacteria and this occurred without a rise in [Ca2+]i. The ability to kill H37Ra decreased in the absence of extracellular calcium and when intra-extracellular calcium was reduced. Immunofluorescence staining revealed that during phagocytosis of H37Ra, annexins III, IV and VI translocated from cytoplasm to the proximity of the H37Ra-containing phagosomes, whereas the localization of annexin I and V remained unchanged. The translocation of annexin IV occurred even when Ca2+-depleted neutrophils ingested H37Ra in the absence of extracellular calcium. We concluded that neutrophil-mediated killing of mycobacteria is a Ca2+-dependent process. The fact that the association of certain annexins to the membrane vesicle containing H37Ra differ from other phagosomes suggests a selective regulatory mechanism during phagocytosis of mycobacteria by neutrophils. Copyright 1998 Academic Press Limited.

Majoor J.W. et al. *The extraction of quality-of-care clinical indicators from State health department administrative databases.* Med J Aust. 1999; 170(9) : 420-4.p Abstract: OBJECTIVE: To assess whether three proposed quality-of-care indicators (unplanned readmissions, hospital-acquired bacteraemia, and postoperative wound infection) can be

accurately identified from State health department databases. DESIGN: Algorithms were applied to State health department databases to maximise the identification of individuals potentially positive for each indicator. Records of these patients were then examined to determine the percentage of cases that met the precise indicator definitions. SETTING: 10 public, acute-care hospitals from Victoria, South Australia and New South Wales. Data from the 1994-95 and 1995-96 financial years were collected. PARTICIPANTS: Individuals 18 years of age or older who were identified from State health department administrative databases as potentially meeting the indicator criteria. MAIN OUTCOME MEASURES: The proportion of screened cases that met the precise indicator definitions, and the elements of the indicator definitions which could not be extracted from the administrative databases. RESULTS: The proportions of cases confirmed by medical record review to be positive for the indicator events were 76.3% for unplanned readmissions within 28 days, 20% for hospital-acquired bacteraemia, 43.5% for wound infections after clean surgery, and 34.8% for wound infections after contaminated surgery. The clinical elements of each indicator definition were not easily extracted from the administrative databases. CONCLUSIONS: The three proposed clinical indicators could not be extracted from current State health department databases without an extensive process of secondary medical record review. If administrative databases are to be used for assessing quality of care, more systematic recording of data is needed.

Malanchuk V.A. et al. *[Antimicrobial action of ozone in the treatment of mandibular fracture].* Klin Khir. 2000; (3) : 43-6.p Abstract: During experiment in vitro and in the clinical environment in patients with the mandibula fracture there were studied up antimicrobic action of the ozonized distilled water, the ozone concentration in which had constituted 0.3 mg/l. Ozonecontaining solution was used in the form of small baths and gargles instead of conventional antiseptic solutions. While local application the pronounced antimicrobic action of ozone was noted. Additionally there was established immunomodulating action of ozone on the local immunity factors in oral cavity, demonstrated by the rise of the secretory immunoglobulin A (SIgA) level and by lowering of the serum immunoglobulins in saliva. This had witnessed the rise of resistance and lowering of expression of the mucosal inflammatory changes. In patients, to whom the conventional treatment was done, the immunologic indexes dynamics was opposite, witnessing presence in them posttraumatic immunodepression. The comparison of data, obtained in the clinic and in experiment, permits to suggest, that antimicrobic action of ozone is mostly mediated via the local immunity activization.

Malangoni M.A. *Single versus combination antimicrobial therapy for ventilator-associated pneumonia.* Am J Surg. 2000; 179(2A Suppl) : 58S-62S.p Abstract: The appropriate selection of definitive antimicrobial therapy is a necessary component of the overall treatment for ventilator-associated pneumonia. When possible, single-agent therapy is preferable. A combination of antibiotics is necessary to treat multiple organisms not susceptible to a single appropriate antibiotic and when antibiotic-resistant gram-negative bacteria are present. Treatment failure is more commonly the result of persistent pneumonia and the development of antibiotic resistance than to recurrence after successful antimicrobial therapy. The duration of treatment will vary depending on the severity of the underlying illness and the pneumonic process.

Malik A.S. et al. *Susceptibility pattern of Streptococcus pneumoniae among preschool children in Kota Bharu, Malaysia.* J Trop Pediatr. 1998; 44(1) : 10-4.p Abstract : Streptococcus pneumoniae (S. pneumoniae) is the most common bacterial cause of pneumonia, meningitis, and otitis media, with the highest incidence among young children and the elderly. S. pneumoniae was once routinely susceptible to penicillin, but since the mid-1980s the incidence of resistance to penicillin and other antimicrobial agents has been increasing all over the world. To optimize empirical regimens and initial therapy for S. pneumoniae infections, clinical healthcare providers must be informed about the prevalence and pattern of drug resistance among the isolates in their communities. No such data are available for the Malaysian population. Therefore, this study was designed to determine the antibiotic susceptibility pattern of S. pneumoniae among colonized pre-school children in Kota Bharu, Malaysia. Pharyngeal swabs were collected from children 1 month to 6 years of age. S. pneumoniae isolates were identified according to the standard and tested for penicillin resistance with a 1-microgram oxacillin disk by the Kirby-Bauer disk diffusion methods. Of 355 nasopharyngeal specimens obtained from kindergarten students, in-patients and pediatric clinics over a period of 1 year, S. pneumoniae was isolated from 36 (10 per cent). All isolates, except one, were susceptible to penicillin. The resistant isolates was susceptible to erythromycin, chloramphenicol and cephalosporins.

Malik R.K. et al. *Epidemiology and control of vancomycin-resistant enterococci in a regional neonatal intensive care unit.* Pediatr Infect Dis J. 1999; 18(4) : 352-6.p Abstract: BACKGROUND: After the occurrence of two cases of bloodstream infection with vancomycin-resistant enterococci (VRE) in our regional neonatal intensive care unit, we studied the epidemiology of VRE and applied extensive infection control measures to the unit to control VRE transmission. METHODS: Infection control measures applied to the unit included weekly surveillance for VRE colonization; education; cohorting of VRE-positive, VRE-negative and VRE-exposed babies with separate personnel and equipment for each group; use of gowns and gloves on room entry; and hand washing before and after each patient contact. Risk factors for VRE colonization were determined with a stepwise logistic regression model. RESULTS: Thirty-three (40.2%) babies became colonized with VRE. The VRE colonization rate was reduced from 67% to 7% after implementation of infection control measures. Prolonged antimicrobial treatment and low birth weight were significantly associated with an increased risk of VRE colonization. CONCLUSION: VRE can spread rapidly among newborns in a regional neonatal intensive care unit. Strict infection control measures can reduce the rate of VRE colonization among neonates.

Malonza I.M. et al. *Community acquired bacterial infections and their antimicrobial susceptibility in Nairobi, Kenya.* East Afr Med J. 1997; 74(3) : 166-70.p Abstract: The purpose of the study was to determine the pattern and antimicrobial sensitivity on community acquired bacterial strains in Nairobi, Kenya. Clinical specimens collected from outpatient clinics at the Kenyatta National Hospital were cultured on appropriate media and identified according to Cowen and Steel's manual. The antimicrobial sensitivity was determined using comparative disc diffusion techniques. Between 1991 and 1995, there were a total of 1659 positive cultures comprising 30 different bacterial species. Out of the overall gram negative isolates (61.9%), E.coli and Klebsiella spp formed over 70%. Among the gram positive, Staphylococcus aureus, Enterococcus and coagulase negative staphylococcus spp constituting 41%, 26% and 18% respectively were the most common. Most organisms showed multiple resistance patterns to commonly used antimicrobials similar to hospital acquired infections. The gram negative isolates were resistant to cotrimoxazole, ampicillin, tetracyclines, chloramphenicol, and sulphamethoxazole. However, the sensitivity of these organisms to gentamicin and kanamycin was between 60 and 90%. Among the gram positive isolates, there was a high resistance to penicillin and tetracyclines (60-90%) while the resistance to lincomycin, minocycline and chloramphenicol was low (5-50%). All isolates were, however, highly sensitive to cephalosporins and fluoroquinolones. Beta-lactamase production among, E.coli, Klebsiella spp and Staphylococcus aureus was 48.9%, 76.7%, 76.1% respectively. Methicillin resistance for Staphylococcus aureus was 59.2%. Indiscriminate use of antibiotics in the community may have selected for resistant strains. This calls for urgent need to review policies on prescription practices.

Mamun K.Z. et al. *Antimicrobial susceptibility of Shigella from a rural community in Bangladesh.* Ann Trop Med Parasitol. 1997; 91(6) : 643-7.p Abstract: Of the 63 Shigella strains isolated from stool cultures from 200 patients who attended a district hospital in Bangladesh with bloody diarrhoea, 37 (59%) were S. dysenteriae type 1, 25 (39%) were S. flexneri and only one (2%) was S. sonnei. Over half (54%) of the Shigella isolates came from children aged < 10 years. Most (89%) of the isolates of S. dysenteriae type 1 were resistant to ampicillin, cotrimoxazole, nalidixic acid, tetracycline and chloramphenicol. Although many (60%) of the isolates of S. flexneri were resistant to ampicillin and cotrimoxazole, only 4% of them were resistant to nalidixic acid. However, all of the S. dysenteriae and S. flexneri were sensitive to ciprofloxacin. The need for periodic monitoring to determine the resistance pattern in remote areas is emphasised.

Mandar R. et al. *Transmission of mother's microflora to the newborn at birth.* Biol Neonate. 1996; 69(1) : 30-5.p Abstract: Our aim was to study the initial microbial colonization of the newborns by comparing it with their mothers' vaginal microflora. Nineteen mother-newborn pairs were examined at delivery. We found a close association, both qualitative and quantitative, between the individually different microflora of a mother's vagina and that of her newborn. The degree of contamination of the newborn significantly correlated with the counts of microorganisms found in the vagina of mothers. In 85% of investigated individual mother-newborn pairs we revealed similar predominant microorganisms. There were no cases of the mothers and their newborns harbouring similar potentially pathogenic prevailing microorganisms.

Mandell L.A. *Antibiotic therapy for community-acquired pneumonia.* Clin Chest Med. 1999; 20(3) : 589-98, ix.p Abstract: This article takes a broad perspective of community-acquired pneumonia (CAP). The arguments and data that support or refute the current approaches to initial antimicrobial treatment of CAP as outlined in the American Thoracic Society and Infectious Disease Society of America documents are provided. The complex issues involved in the decision of how to properly treat CAP are addressed.

Mandell L.A. *[The role of trovafloxacin in the treatment of nosocomial pneumonia].* Medicina (B Aires). 1999; 59 Suppl 1 : 39-46.p Abstract: In order to understand the role of trovafloxacin in the treatment of nosocomial pneumonia, the nature and characteristics of this infection have to be first reviewed. During the first part of this revision the principal aspects of the epidemiology are reviewed, some concepts which take part in the pathogenia of the illness and the immunology of these patients are analysed and the microbiological characteristics of nosocomial pneumonia are evaluated. In the second part of the revision the bacterial resistance to the main groups of antibiotics is considered, listing the different mechanisms used by the bacteria to develop this resistance. They are: production of enzymes which inactivate the antibiotic, access reduction of the drug to the target site, increase of the antibiotic efflux or changes in the target site. Current controversies concerning diagnostic methods and some controversial issues regarding this pathology are here discussed. Finally, the proposed guidelines for the treating hospital acquired pneumonia are revised as well as the role of special new antibiotics. In this sense special reference is made to trovafloxacin, listing its principal characteristics, as its broad spectrum of activity, its excellent pharmacokinetic properties, its availability in i.v. and oral formulations and its good tolerance, which makes trovafloxacin a very interesting option for treatment of hospital acquired pneumonia.

Mandell L.A. et al. *Nosocomial pneumonia guidelines: an international perspective.* Chest. 1998; 113(3 Suppl) : 188S-193S.p Abstract: Hospital-acquired pneumonia is a serious illness with substantial morbidity and mortality. Management of this illness is challenging for the physician and a number of diverse issues must be considered when initiating therapy. Guidelines for the treatment of hospital-acquired pneumonia have been developed in Canada and the United States. A questionnaire sent to infectious disease physicians or clinical microbiologists in 29 countries showed that Australia, Sweden, and France had national guidelines in addition to Canada and the United States, while Hong Kong and France had single hospital-based guidelines. These guidelines are reviewed and some of the controversial issues relating to nosocomial pneumonia are discussed.

Mandic A. et al. *[The role and importance of plasmid resistance in certain pathogenic enterobacteria].* Med Pregl. 1995; 48(11-12) : 437-40.p Abstract: Conjugation, as a process of gene recombination where R-plasmids are transferred from resistant to sensitive genera of bacteria, is very important in the onset and development of infective multiple resistance to the bacterial division potential, whereas it enables fast spreading of resistant genera in the human population. Problems in regard to etiologic therapy of intestinal infections are most serious in shigellosis which is shown in our results of examining 450 genera of Shigella-sonnei isolated during the period January 1990-December 1994. Thus, resistance to ampicillin occurs in 99.4%, while resistance to streptomycin and cotrimoxazole occurs in 94%. Results of gene resistance transmission from Shigella-sonnei genera, potential donors into recipients by conjugation in vitro, show high frequency of transfer to ampicillin which points to the fact that it is determined by plasmids and transposons-mobile extrachromosomal gene structure. Similar results are gained by multiple-resistant genera of Salmonella wien. However, the stereotype which is dominant in our region and which makes more than 70% of all isolated salmonellas, Salmonella enteritidis is still sensitive to all most commonly used antimicrobial drugs. On the basis of gathered results it may be concluded that the antibiotics of choice in the etiologic therapy of intestinal infections are quinolone-norfloxacin and ciprofloxacin because the resistance which may occur is chromosomally determined.

Manfredi R. et al. *Typhoid fever and HIV infection: a rare disease association in industrialized countries.* Int J Infect Dis. 1998-1999; 3(2) : 105-8.p Abstract: Typhoid fever is still a global health problem, mainly in tropical and subtropical areas of the world and in developing countries, where relatively elevated morbidity and mortality rates still are present, mostly because of persisting poor hygienic conditions. In the majority of Mediterranean regions, including Italy, the disease is constantly present, though with a low prevalence rate, as a result of an endemic persistence of Salmonella typhi infection.1-4 On the other hand, in industrialized countries, most cases of S. typhi infection are related to foreign travel or prior residence in endemic countries.4-6 In the United States, 2445 cases of typhoid fever have been reported in the decade 1985 to 1994, and the annual number of cases remained relatively stable over time: over 70% of episodes were acquired in endemic countries (mostly Mexico and India).6 The persisting morbidity of S. typhi also may be supported by the increasing resistance rate of this pathogen against a number of commonly used antimicrobial compounds. For instance, 6% of 331 evaluable S. typhi strains were resistant to ampicillin, chloramphenicol, and cotrimoxazole, and 22% of isolates were resistant to at least one of these three agents in a recent survey performed in the United States.6 The spread of antibiotic resistance among S. typhi isolates is emerging in many countries, and multidrug-resistant strains have been isolated, as well as isolates with poor susceptibility to fluoroquinolones,3-5,7-9 so that in vitro susceptibility should be determined for all cultured strains, and antimicrobial treatment should be adjusted accordingly. Nevertheless, fluoroquinolones (e.g., ciprofloxacin and pefloxacin) or third-generation cephalosporins, still represent the best choice for empirical treatment,2,4,6-8,10 and mortality remains rare in Western countries (less than 1% of episodes), although it is expected to be greater in developing areas of the world. The aim of this report is to describe two cases of typhoid fever that occurred in patients with human immunodeficiency virus (HIV) infection, a rarely reported disease association in industrialized countries.

Manfredi R. et al. *Clinical and microbiological survey of Serratia marcescens infection during HIV disease.* Eur J Clin Microbiol Infect Dis. 2000; 19(4) : 248-53.p Abstract: Clinical charts of 2,398 consecutive HIV-infected patients hospitalized over an 8-year period were reviewed retrospectively to identify all cases of Serratia infection and to evaluate the occurrence and outcome of these cases according to several epidemiological. clinical, and laboratory parameters. Seventeen of 2,398 (0.71%) patients developed Serratia marcescens infections: nine had septicaemia, six had pneumonia, one had a lymph node abscess, and one had cellulitis. All patients were severely immunocompromised, as evidenced by a mean CD4+ lymphocyte count of < 70 cells/microl and a frequent diagnosis of AIDS (13 patients). When compared with other disease localizations, septicaemia was related to a significantly lower CD4+ cell count and a more frequent occurrence of neutropaenia. Antibiotic, corticosteroid, or cotrimoxazole treatment was frequently carried out during the month preceding disease onset. Hospital-acquired Serratia spp. infection was more frequent than community-acquired infection and was significantly related to AIDS, neutropaenia, and sepsis. Antimicrobial sensitivity testing showed complete resistance to ampicillin and cephalothin but elevated susceptibility to ureidopenicillins, second- and third-generation cephalosporins, aminoglycosides, quinolones, and cotrimoxazole. An appropriate antimicrobial treatment attained clinical and microbiological cure in all cases, in absence of related mortality or relapses. Since only 13 episodes of HIV-associated Serratia spp. infection have been described until now in nine different reports (7 patients with pneumonia, 3 with sepsis, 1 with endophthalmitis, 1 with perifolliculitis, and 1 with cholecystitis), our series represents the largest one dealing with Serratia marcescens infection during HIV disease. Serratia marcescens may be responsible for appreciable morbidity among patients with HIV disease, especially when a low CD4 + cell count, neutropaenia, and hospitalization are present. The clinician and the microbiologist facing a severely immunocompromised HIV-infected patient with a suspected bacterial disease should consider the Serratia spp. organisms. In fact, a rapid diagnosis and an adequate and timely treatment can avoid disease relapses and mortality.

Manfredi R. et al. *Emerging gram-negative pathogens in the immunocompromised host: Agrobacterium radiobacter septicemia during HIV disease.* New Microbiol. 1999; 22(4) : 375-82.p Abstract: Three out of 2,412 consecutive HIV-infected patients hospitalized since 1990, developed Agrobacterium radiobacter septicemia. All patients were severely immunocompromised, showing a prior diagnosis of AIDS, concurrent opportunistic infections, a mean CD4+ lymphocyte count below 100 cells/microL, and neutropenia. Nosocomial A. radiobacter sepsis occurred in two cases of three, and was related to a lower neutrophil and CD4+ cell count. Antibiotic and cotrimoxazole treatment were carried out during the month preceding disease onset by two and three patients, respectively. Antimicrobial susceptibility assays showed resistance to ureidopenicillins and aztreonam, and complete sensitivity to carbapenems, amikacin, and ciprofloxacin. A therapeutic regimen including amikacin plus ceftriaxone or ceftazidime obtained clinical and microbiological cure in all cases, in the absence of related mortality or relapses. Only two episodes of HIV-associated A. radiobacter complications have been described to date: one case of sepsis and one patient with pneumonia. Despite their low frequency, gram-negative non-fermenting bacilli should be considered in HIV-infected patients with a suspected bacterial complication, because of their cumbersome identification procedures, and their unpredictable antibiotic susceptibility, with elevated resistance to many compounds expected to be effective against gram-negative organisms. A. radiobacter may play a pathogenic role in patients with advanced HIV disease, even when some commonly recognized risk factors are lacking (in-dwelling catheters and instrumentation), while a very low CD4+ lymphocyte count, leukopenia-neutropenia, hospitalization, and concurrent AIDS-related infectious complications, may act as predisposing factors.

Manfredi R. et al. *Flavobacterium spp. organisms as opportunistic bacterial pathogens during advanced HIV disease.* J Infect. 1999; 39(2) : 146-52.p Abstract: OBJECTIVE: To assess the role of Flavobacterium spp. infection in patients with HIV disease. METHODS: Clinical charts of 2412 consecutive HIV-infected patients hospitalized in a 8-year period were retrospectively reviewed, to identify all cases of Flavobacterium spp. infections, and to evaluate their occurrence and outcome according to several epidemiological, clinical, and laboratory parameters. RESULTS: Six patients out of 2412 (0.25%), developed Flavobacterium spp. complications: septicaemia in five cases, and pneumonia in the remaining patient, with F. meningosepticum and F. odoratum isolated in two cases and one case, respectively, and unnamed Flavobacterium spp. organisms in the remaining three cases. Flavobacterium spp. organisms were responsible for six out of 1939 overall episodes of non-mycobacterial bacterial diseases observed in our patient group (0.31%). All patients were severely immunocompromised, showing a prior diagnosis of AIDS, a mean CD4+ lymphocyte count of 64.2 (range 12-187) cells/microl, and a mean neutrophil count of 1.143 (range 700-1600) cells (range 700-1600) cells/microl. Antibiotic, corticosteriod, or cotrimoxazole treatment was carried out during the month preceding disease onset by three, two and five patients, respectively. Community-acquired and nosocomial Flavobacterium spp. disease were equally frequent, but the latter occurred with a significantly lower mean neutrophil and CD4+ cell count. Antimicrobial susceptibility assays showed complete sensitivity to ciprofloxacin, and variable resistance to ureidopenicillins, ceftazidime, imipenem, aztreonam, and aminoglycosides. An appropriate antimicrobial regimen obtained clinical and microbiological cure in all cases, in absence of related mortality or relapses. CONCLUSIONS: Since only one episode of HIV-associated F. (Sphingobacterium) multivorum complication has been described to date, our series represents the largest one dealing with Flavobacterium spp. infection in the setting of HIV disease. Our experience suggests that Flavobacterium spp. organisms may play a pathogenic role in patients with advanced HIV disease, even when some commonly recognized risk factors are lacking (i.e. indwelling catheters, instrumentation, IV drug abuse), while a very low CD4+ lymphocyte count, leukopaenia-neutropaenia, and concurrent AIDS-related infectious complications may act as important predisposing factors. In view of the infrequent occurrence of these infections, early suspicion is essential for both clinicians and microbiologists facing immunocompromised patients at risk for invasive bacterial complications. Flavobacterium spp. organisms should be taken into consideration as nosocomial- or community-acquired opportunistic pathogens, due to their relationship with advanced immunodeficiency and their elevated resistance to many antimicrobial agents commonly used against Gram-negative bacterial pathogens.

Manfredi R. et al. *Bilateral acute suppurative parotitis due to Staphylococcus aureus: an hospital acquired case with fatal outcome.* Panminerva Med. 1997; 39(1) : 56-60.p Abstract: During recent decades, acute bacterial parotitis has progressively changed its etiological and clinical spectrum. New risk factors and causative agents are emerging, while the associated rates of complications and mortality may remain still significant. A rare case of concurrent bilateral suppurative parotitis caused by Staphylococcus aureus has been observed in a patient hospitalized for prior abdominal surgery and multiple underlying illnesses. The disease had a complicated and ultimately fatal outcome, despite a timely diagnosis being made and a specific treatment started. A literature review dealing with risk factors, microbiology, clinical picture, complications, differential diagnosis, treatment and outcome of suppurative parotitis is presented.

Mannhardt W. et al. *The interaction of buccal mucosal epithelial cells with E. coli bacteria enhances the intraepithelial calcium flux and the release of prostaglandin E2 (PgE2).* Int Urogynecol J Pelvic Floor Dysfunct. 1999; 10(5) : 308-15.p Abstract: Mucosal epithelial cells contribute significantly to host defense mechanisms. Uroepithelial cells (UEC) from healthy donors suppress bacterial growth in vitro. Bacterial adherence to UEC has been shown to be a prerequisite.

Similar results have been shown for buccal epithelial cells (BEC). The host response triggered by the host-parasite interaction seems to involve signal transduction and intracellular activation of second messengers. In this study the intraepithelial calcium flux was analyzed in individual BEC after bacterial contact. BEC were derived from scrapes of the buccal mucosa and labelled with fluo-3 (a calcium indicator). Thereafter the cells were analyzed immediately with a FACscan flowcytometer. The intracellular events were evaluated before and after the addition of viable E. coli bacteria (strain 4389, K1O1H7, pili II pos.). For control, the influence of prostaglandins, histamine, PMA, LPS and opsonized avital E. coli on the epithelial calcium flux was investigated. Additionally, supernatants of BEC-E. coli cocultures were analyzed with respect to their PgE2 content. PgE2 concentrations in supernatants of BEC, cultured alone or together with E. coli, were measured by a commercial PgE2 ELISA kit. The addition of vital E. coli to BEC was promptly answered by a significant intracellular calcium flux. PgE2, histamine and PMA, but not PgF2alpha, PgE1, LPS and opsonized E. coli, increased intracellular calcium. BEC alone did not release PgE2. After coculture with E. coli increased levels of PgE2 were measured in the supernatants. PgE2 release was still enhanced by coactivation of the BEC with phorbolester (PMA). Our results confirm that calcium flux in mucosal epithelial cells is stimulated by the cell-bacteria contact. We suggest that the increased PgE2 release amplifies the stimulation of intraepithelial second messengers. The resulting cell activation may lead to the secretion of antimicrobial peptides, thereby contributing to the regulation of mucosal host resistance to bacterial infections.

Manninen R. et al. *Increasing antimicrobial resistance in Streptococcus pneumoniae, Haemophilus influenzae and Moraxella catarrhalis in Finland.* J Antimicrob Chemother. 1997; 40(3) : 387-92.p Abstract: Respiratory and otitis isolates of 807 Streptococcus pneumoniae, 816 Haemophilus influenzae and 446 Moraxella catarrhalis were collected from 21 clinical microbiology laboratories for antimicrobial susceptibility testing in 1995. After a period of relative stability in 1981 and 1987-1990, beta-lactamase production increased in H. influenzae. Among middle ear isolates from children under 6 years, beta-lactamase production increased from 8% to 24% in H. influenzae and from 81% to 96% in M. catarrhalis since the survey in 1987-1990. 1.2% of S. pneumoniae were penicillin-resistant and 4.2% intermediately resistant; 5 years earlier among otitis isolates of children only 1.7% intermediate resistance was found. Ampicillin resistance was seen among 1.9% of non-beta-lactamase-producing strains of H. influenzae. Resistance to trimethoprim-sulphamethoxazole occurred in 9.4% of S. pneumoniae, 7.4% of H. influenzae and 0.7% of M. catarrhalis. Frequencies of azithromycin resistance were 3.0% in S. pneumoniae and 1.6% in H. influenzae, and those of tetracycline resistance were 6.7% in S. pneumoniae and 1.2% in H. influenzae.

Manning M.L. et al. *The judicious use of antibiotic agents in common childhood respiratory illness.* Nurs Clin North Am. 2000; 35(1) : 87-94.p Abstract: Increased bacterial resistance is caused most frequently by the widespread use of antimicrobial agents. Antimicrobial agents are often used inappropriately to treat common respiratory illnesses in children. This article discusses the judicious use of antimicrobials in the common cold, otitis media, acute sinusitis, pharyngitis, and bronchitis.

Manolis A.S. et al. *Electrophysiologist-implanted transvenous cardioverter defibrillators using local versus general anesthesia.* Pacing Clin Electrophysiol. 2000; 23(1) : 96-105.p Abstract: With the advent of smaller biphasic transvenous implantable cardioverter defibrillators (ICDs) and the experience gained over the years, it is now feasible for electrophysiologists to implant them safely in the abdominal or pectoral area without surgical assistance. Throughout the years, general anesthesia has been used as the standard technique of anesthesia for these procedures. However, use of local anesthesia combined with deep sedation only for defibrillation threshold (DFT) testing might further facilitate and simplify these procedures. The purpose of this study was to test the feasibility of using local anesthesia and compare it with the standard technique of general anesthesia, during implantation of transvenous ICDs performed by an electrophysiologist in the electrophysiology laboratory. For over 4 years in the electrophysiology laboratory, we have implanted transvenous ICDs in 90 consecutive patients (84 men and 6 women, aged 58 +/- 15 years). Early on, general anesthesia was used (n = 40, group I), but in recent series (n = 50, group II) local anesthesia was combined with deep sedation for DFT testing. Patients had coronary (n = 58) or valvular (n = 4) disease, cardiomyopathy (n = 25) or no organic disease (n = 3), a mean left ventricular ejection fraction of 35%, and presented with ventricular tachycardia (n = 72) or fibrillation (n = 16), or syncope (n = 2). One-lead ICD systems were used in 74 patients, two-lead systems in 10 patients, and an AVICD in 6 patients. ICDs were implanted in abdominal (n = 17, all in group I) or more recently in pectoral (n = 73) pockets. The DFT averaged 9.7 +/- 3.6 J and 10.2 +/- 3.6 J in the two groups, respectively (P = NS) and there were no differences in pace-sense thresholds. The total procedural duration was shorter (2.1 +/- 0.5 hours) in group II (all pectoral implants) compared with 23 pectoral implants of group I (2.9 +/- 0.5 hours) (P < 0.0001). Biphasic devices were used in all patients and active shell devices in 67 patients; no patient needed a subcutaneous patch. There were six complications (7%), four in group I and two in group II: one pulmonary edema and one respiratory insufficiency that delayed extubation for 3 hours in a patient with prior lung resection, both probably related to general anesthesia, one lead insulation break that required reoperation on day 3, two pocket hematomas, and one pneumothorax. There was one postoperative arrhythmic death at 48 hours in group I. No infections occurred. Patients were discharged at a mean time of 3 days. All devices functioned well at predischarge testing. Thus, it is feasible to use local anesthesia for current ICD implants to expedite the procedure and avoid general anesthesia related cost and possible complications.

Mansur A.J. et al. *Determinants of prognosis in 300 episodes of infective endocarditis.* Thorac Cardiovasc Surg. 1996; 44(1) : 2-10.p Abstract: We studied 300 episodes of infective endocarditis in 287 patients to evaluate clinical and laboratory determinants of prognosis by estimating the probability of in-hospital death. The patients' ages ranged from 2 months to 78 (mean 30.76 +/- 16.06) years; 185 (62%) episodes occurred in male and 115 (38%) in female patients. A total of 386 complications occurred in 223 (74%) episodes of endocarditis. The infecting microorganisms were streptococci in 147 episodes, Staphylococcus aureus in 59, Staphylococcus epidermidis in 14, gram-negative bacteria in 16, other gram-positive bacteria in 8, fungi in 4. The causative microorganism was not identified in 52 episodes (negative blood cultures). The underlying cardiac disease was valvular in 119 episodes, congenital in 37, prosthetic heart valve in 69, and others in 6. No previous heart disease was identified in 69 episodes. Surgical treatment was carried out in 102 (34%) patients. Overall, 78 (26%) patients died. The probability of death was estimated with a logistic regression model (stepwise procedure). The model with best prediction included the cardiac status previous to the endocarditis, the causative microorganism, the occurrence of complications, and the blood leukocyte count. The most important variable in predicting in-hospital death was the occurrence of complications, followed by cardiac status (prosthetic valve endocarditis), the infecting microorganism, and leukocyte count. The model underestimated the severity of the disease in patients with acute endocarditis and overestimated in patients with prosthetic valve endocarditis submitted to surgical treatment.

Mao C.A. et al. *Antimicrobial resistance patterns in long term geriatric care. Implications for drug therapy.* Drugs Aging. 1996; 8(3) : 162-70.p Abstract: There is a high prevalence of bacterial infections in long term care facilities (4.4 to 16.2%). This, together with the fact that antimicrobial resistance is a big concern in current medical practice, makes infection control so important in nursing home care. This

article covers the mechanisms of antibacterial resistance and focuses on 4 major antibacterial-resistant bacteria. Vancomycin is the treatment of choice for methicillin-resistant Staphylococcus aureus (MRSA). Colonisation with MRSA is not uncommon in nursing homes and eradication is probably not necessary. Any clinically important enterococcal infection should be tested for high-level resistance. An infectious disease consultation should be sought for vancomycin-resistant enterococcal infections. Gram-negative bacilli have developed multi-resistance. Susceptibility testing can identify the most appropriate therapy. Multiresistance should also be considered when treating Streptococcus pneumoniae. Overall, handwashing is highly recommended. Barrier precautions, minimising hospitalisations and avoiding unnecessary personnel rotation can reduce the chance of resistance spread.

Maraki S. et al. *Antimicrobial susceptibilities and beta-lactamase production of Shigella isolates in Crete, Greece, during the period 1991-1995.* APMIS. 1998; 106(9) : 879-83.p Abstract: The susceptibility to 11 antibiotics was determined for 52 strains of Shigella isolated from patients with diarrheal disease in Crete, Greece, during the period 1991-1995. Forty-six percent of the isolates were resistant to ampicillin, 48% to tetracycline, 44.2% to chloramphenicol, and 28.8% to cotrimoxazole. Shigella flexneri was more resistant than S. sonnei to ampicillin (82 vs 4.3%), to tetracycline (82 vs 8.7%) and to cotrimoxazole (42.8 vs 13%). Overall, 82% of all S. flexneri isolates were resistant to the three or four antimicrobial agents tested. The beta-lactamases produced by shigellae were identified by isoelectric focusing and were found to be OXA-1, TEM-1, and a low-level beta-lactamase with a pI>8. The results from the present study, which is the first carried out in Crete, emphasize the need for continuous surveillance of resistance and control of antibiotic usage.

Maranan M.C. et al. *Antimicrobial resistance in staphylococci. Epidemiology, molecular mechanisms, and clinical relevance.* Infect Dis Clin North Am. 1997; 11(4) : 813-49.p Abstract: Staphylococcal infections continue to pose important clinical problems in children and adults. Antibiotic resistance among the staphylococci has rendered therapy of these infections a therapeutic challenge. Despite early, uniform susceptibility to penicillin, staphylococci acquired a gene elaborating beta-lactamase that rendered penicillin inactive and that is borne by nearly all clinical isolates. "Penicillinase-resistant beta-lactams," such as methicillin, were introduced in the early 1960s, but resistance to them has become an increasing concern. The mechanism of the so-called "methicillin resistance" is complex. Moreover, once confined to the ecology of hospitals and other institutions, a recent increase in community-acquired methicillin-resistant S. aureus infections has been observed. Glycopeptides, until now the only uniformly reliable therapeutic modality, have been increasingly used for therapy of staphylococcal infections. The recent recognition of clinical isolates with reduced susceptibility to glycopeptides is of concern.

Marchal S. et al. *Influence of the fluoroquinolone ofloxacin on the intrinsic expression of multidrug resistance phenotype in HCT-8 human colon carcinoma cells.* Oncol Res. 1999; 11(8) : 375-81.p Abstract: The influence of antibiotics, particularly ofloxacin (OF), a commonly used antimicrobial fluoroquinolone, on the multidrug resistance (MDR) phenotype of the HCT-8 cell line was studied. This cell line was grown in OF containing medium for several months and the expression of the MDR phenotype was followed through the analysis of the expression and functionality of the P-glycoprotein (Pgp), the chemosensitivity to daunorubicin (DNR), and the mRNA expression of mdr-1, multidrug resistance-associated protein (MRP), and topoisomerase IIalpha and IIbeta genes. Replacement of OF by penicillin streptomycin (PS) resulted in a significant decrease in mdr-1 mRNA expression, which was found to correlate with a decrease in the expression and functionality of the Pgp. After antibiotic starvation for 4 weeks, cells grown in antibiotic-free medium were then exposed to PS or OF; these cells showed an increase in mdr-1 mRNA/Pgp and MRP mRNA expression without a decrease in DNR cytotoxicity. OF cultured cells exhibited a significant increase in Pgp expression without evidence of the functionality of the Pgp. An increase in topoisomerase IIalpha mRNA expression was observed with time and with the number of passages of the cell line without any relationship to the presence of antibiotics in the culture medium. These results showed that extensive use of antibiotics, particularly the quinolones, can modify the phenotype of the HCT-8 colon adenocarcinoma cell line.

Marchese A. et al. *Macrolide resistance mechanisms and expression of phenotypes among Streptococcus pneumoniae circulating in Italy.* J Antimicrob Chemother. 1999; 44(4) : 461-4.p Abstract: In Italy, macrolide-resistant pneumococci have been isolated at a rate increasing from 6% in 1993 to 31.7% in 1998. A collection of 161 erythromycin-resistant Streptococcus pneumoniae recovered between 1993 and 1997 has now been phenotypically and genotypically characterized. Approximately 90% of these microorganisms possessed a constitutive MLS(B) mechanism of resistance. PCR detected ermB and mefE genes in strains showing MLS(B) and M phenotypes, respectively. Using pulsed-field gel electrophoresis of chromosomal DNA, one dominant restriction profile and its variations were detected in 51 S. pneumoniae isolates collected from different locations, indicating the circulation of a clone characterized by the possession of a great ability to spread.

Marcus N. et al. *Rapid increase in the prevalence of antimicrobial drug resistance among enterococcal blood isolates in southern Israel.* Eur J Clin Microbiol Infect Dis. 1997; 16(12) : 913-5.p Abstract: A prospective surveillance was conducted to monitor the prevalence and dynamics of antimicrobial resistance among enterococci isolated from blood cultures in southern Israel. A total of 242 organisms isolated between 1993 and 1996 were studied. The prevalence of Enterococcus faecalis significantly decreased during the study period, whereas that of Enterococcus faecium doubled. Antimicrobial drug resistance increased steadily among Enterococcus faecium isolates: resistance to ampicillin increased from 19% in 1993-1994 to 53% in 1995, and to 67% in 1996 ($p = 0.005$); during the same period, resistance to vancomycin increased from 0% to 20%, and to 50% ($p = 0.002$), and combined resistance to ampicillin and vancomycin and high-level resistance to gentamicin from 0% to 20% and to 38% ($p < 0.02$).

Mares D.C. et al. *Bronchoscopy in the diagnosis of respiratory infections.* Curr Opin Pulm Med. 1998; 4(3) : 123-9.p Abstract: In recent years, several factors have altered the spectrum of respiratory infections and their likelihood of response to empiric treatment. Altered microbial resistance has led to the possible need for specific etiologic diagnosis in some hospital-acquired infections in the normal host. In the immune-compromised host, the spectrum of atypical presentations and unusual organisms limits the clinician's ability to choose effective empiric therapies. In the normal host, bronchoscopic diagnosis seems to be most useful in the groups with severe community-acquired pneumonia or poor response to therapy for community-acquired pneumonia. The group of patients with ventilator-associated pneumonia has been well-researched and the bronchoscopic techniques tend to show increased sensitivity over other diagnostic means, but this has not been proven to alter morbidity, mortality, or cost effectiveness. The immune-compromised host is commonly infected by organisms not easily diagnosed by other means and is thus unable to be treated empirically. Bronchoscopic diagnostic techniques play a larger and more clearly delineated role in these populations, including the patient populations with solid organ transplants, bone marrow transplants, and AIDS.

Mariani B.D. et al. *Development of a novel, rapid processing protocol for polymerase chain reaction-based detection of bacterial infections in synovial fluids.* Mol Biotechnol. 1995; 4(3) : 227-37.p Abstract: We describe the development of a molecular detection system designed for use with synovial fluid (SF)-based infections. The methodology employs a

lysis/extraction procedure that effectively disrupts microorganisms allowing for release of the microbial DNA and its amplification by polymerase chain reaction (PCR). We tested the effectiveness of adding a mixed-bed, ion-exchange resin to the extract to remove PCR inhibitory components present in the SF. After centrifugation to separate the resin, DNA contained in the supernatant is subjected to PCR using oligonucleotide primers designed for broad-spectrum microorganism detection. Amplification products are analyzed by agarose gel electrophoresis and/or DNA hybridization methodology. We report here the detection sensitivity and specificity of the protocol using SF inoculated with Escherichia coli and Staphyloccocus aureus. We have applied this new methodology to clinical SF specimens with results superior to standard laboratory culturing assays.

Mariani-Kurkdjian P. et al. *[New spectra of resistance of the main bacteria of the respiratory tract].* Arch Pediatr. 1998; 5 Suppl 1 : 14s-17s.p Abstract: Management of acute pneumonia requires knowledge of current etiologic agents. Haemophilus influenzae and Streptococcus pneumoniae are the main responsible pathogens. Changes in epidemiology particularly occur in the susceptibility of antibiotics to S pneumoniae which is the main target of antimicrobial therapy.

Marin M.G. et al. *Prevention of nosocomial bloodstream infections: effectiveness of antimicrobial-impregnated and heparin-bonded central venous catheters.* Crit Care Med. 2000; 28(9) : 3332-8.p Abstract: OBJECTIVES: To examine the effectiveness of antimicrobial-impregnated and heparin-bonded catheters relative to standard central venous catheters in lessening catheter-related bloodstream infections. DATA SOURCES: Articles were identified by computer-assisted searching. STUDY SELECTION: Studies were eliminated from further consideration if they did not contain original data relevant to lessening catheter-related bloodstream infections, were nonrandomized or uncontrolled, described subjects <17 yrs of age, or used animal subjects. DATA ABSTRACTION: From each eligible article, we abstracted the following: a) citation; b) type of control; c) study setting; d) type of experimental catheter; e) catheter-specific complications; f) total numbers of patients and catheters; g) number of experimental catheters used that resulted in a catheter-related bloodstream infection; h) number of control catheters used that resulted in a catheter-related bloodstream infection; i) number of experimental catheters used without catheter-related bloodstream infections; and j) number of control catheters used without infections. We also recorded the duration of catheter use and the types of microbes cultured in association with the catheters and with catheter-related bloodstream infections. DATA SYNTHESIS: Eleven eligible studies were identified. Using meta-analysis, we showed that antimicrobial-impregnated and heparin-bonded central venous catheters significantly decreased catheter-related bloodstream infections by 2.32% (95% confidence interval, 1.04% to 3.61%). CONCLUSIONS: The modest additional cost for the use of these catheters relative to the considerable cost of treating even a single bloodstream infection makes their use cost-effective.

Marina A. et al. *Carbamate kinase from Enterococcus faecalis and Enterococcus faecium—cloning of the genes, studies on the enzyme expressed in Escherichia coli, and sequence similarity with N-acetyl-L-glutamate kinase.* Eur J Biochem. 1998; 253(1) : 280-91.p Abstract: Carbamate kinase (CK) catalyzes the reversible reaction NH2COO- + ATP <—> NHCOOPO3(2-) + ADP, serving to synthesize ATP from carbamoyl phosphate in those microorganisms that derive energy from anaerobic arginine degradation via the arginine dihydrolase pathway. We report here the cloning and sequencing of the CK gene from Enterococcus faecalis and Enterococcus faecium and we demonstrate that the amino acid sequence of CK is identical in the two species. The enzyme, expressed and isolated from Escherichia coli using simple purification procedures, was used to generate crystals suitable for X-ray studies and to investigate the utilization by CK of bicarbonate and other carbamate analogs. CK had a bicarbonate-dependent ATPase activity and, therefore, is able to synthesize carboxyphosphate, an unstable compound that is an intermediate in the reactions catalyzed by carbamoyl-phosphate synthetase (CPS) and by biotin carboxylase. Other functional similarities with CPS include the utilization of acetate by CK with a similarly high Km and the similar Km values of CK for carbamate and of CPS for bicarbonate. Enterococcal CK was inhibited by adenosine(5')pentaphospho(5')adenosine (Ap5A) and Ap6A and, less powerfully, by Ap4A, whereas Ap3A is essentially non-inhibitory. Thus, inhibition by Ap5A seems not to be a valid criterion to differentiate between CK and CPS, for the two enzymes can be inhibited by Ap5A. All these results support the relatedness of CK and CPS. Finally, we used limited proteolysis: (a) to localize the epitopes for monoclonal antibodies obtained against CK; (b) to demonstrate the importance of the C-terminus for enzyme activity; and (c) to show that Arg158 is highly exposed and may be essential for activity. Comparison of the sequence of CK with known protein sequences demonstrates considerable similarity of CK with bacterial N-acetylglutamate kinases, strongly suggesting that these two enzymes may share a similar structure and the same catalytic mechanism.

Marinella M.A. et al. *Spectrum of upper-extremity deep venous thrombosis in a community teaching hospital.* Heart Lung. 2000; 29(2) : 113-7.p Abstract: OBJECTIVE: The goal of this study was to characterize the spectrum of upper-extremity deep venous thrombosis in a community teaching hospital. DESIGN AND SETTING: A retrospective analysis was used at a large urban teaching hospital. MATERIAL AND METHODS: We reviewed the records of 90 patients with ultrasound-documented thrombosis of the internal jugular, subclavian, axillary, or brachial veins to determine clinical characteristics, risk factors, and outcome. RESULTS: The most common underlying conditions associated with upper-extremity deep venous thrombosis were the presence of a central venous catheter in 65 patients (72%), infection in 25 (28%), extrathoracic malignancy in 20 (22%), thoracic malignancy in 19 (21%), renal failure in 19 (21%), and a prior lower-extremity deep venous thrombosis in 16 (18%). Pain was noted in 31 (34%) patients, and 76 patients (84%) had edema of the involved extremity. The left subclavian vein was involved in 44 patients (49%), and 35 patients (39%) had a central venous catheter in the left subclavian vein. When a central venous catheter was present, the deep venous thrombosis was usually ipsilateral (P <.001). Heparin and warfarin were administered to 65 (72%) and 53 (59%) of the patients, respectively. Eleven patients (12%) died. Of these patients, 8 (73%) had an underlying infection, whereas only 22% of survivors had an infection (P =.0012). CONCLUSION: Upper-extremity deep venous thrombosis typically occurs in patients with a systemic illness in the presence of a central venous catheter. The left subclavian vein is frequently involved because this is a common site for placement of a central venous catheter. Pain is uncommon, but edema of the involved extremity is noted in the majority of patients. The mortality rate of patients in this study with an upper-extremity deep venous thrombosis was 12%; most patients who died had a central venous catheter and an underlying infection.

Marini R.P. et al. *Microbiologic, radiographic, and anatomic study of the nasolacrimal duct apparatus in the rabbit (Oryctolagus cuniculus).* Lab Anim Sci. 1996; 46(6) : 656-62.p Abstract: This study was motivated by the sporadic observation of epiphora in two male rabbits. The epiphora was unilateral and not associated with conjunctivitis or Pasteurella infection. To characterize the cause of epiphora, we studied 15 specific-pathogen-free New Zealand White rabbits. This study group was composed of the two affected males, four unaffected males, and nine unaffected females. Clinical evaluation consisted of bacterial culture of conjunctival specimens, examination of conjunctival scrapings for chlamydial inclusions, culture and cytologic examination of specimens from the nasolacrimal duct, plain and contrast radiography, latex casting, histologic examination, and the Schirmer tear test. Important differences found in the rabbits with

epiphora included an opalescent, gritty, nasolacrimal duct flush fluid and marked unilateral dilatation of the duct proximal to a dorsal flexure at the caudal limit of the incisor tooth root. The flush solution from one affected rabbit cleared with ether, suggesting the presence of triglycerides or cholesterol. The organisms most commonly isolated from the conjunctiva were Moraxella sp., Oligella urethralis, Staphylococcus aureus, coagulase-negative Staphylococcus sp., and Streptococcus viridans. The organisms most commonly isolated from the nasolacrimal duct flush fluid were Moraxella sp., S. viridans, and Neisseria sp. Culture of the nasolacrimal duct flush fluid yielded microorganisms more consistently than did culture of the conjunctival specimens. All microorganisms isolated from affected rabbits also were isolated from unaffected rabbits. There was no apparent contribution of microorganisms to the development of epiphora, and Schirmer tear test results for affected animals were within the range seen in unaffected animals. Occlusion of the nasolacrimal duct was presumed to be attributable to fat droplets. This study augments the existing literature and represents the first report of anomalous nasolacrimal duct anatomic features in the rabbit.

Marino G. et al. *A comparison of the MicroCount Digital System to plate count and membrane filtration methods for the enumeration of microorganisms in water for pharmaceutical purposes.* PDA J Pharm Sci Technol. 2000; 54(3) : 172-92.p Abstract: The enumeration of microorganisms in water for pharmaceutical purposes using the MicroCount Digital System (Millipore Corporation, Bedford, MA) was compared to the USP-recommended Pour Plate and Membrane Filtration Count methods. A study, using a pure culture of Buckholderia cepacia, ATCC#25416, showed that the accuracy, precision, reproducibility and linearity of the MicroCount ATP Bioluminescence System was equivalent to or better than the traditional methods. When the MicroCount System was used to monitor purified water and water for injection taps in a pharmaceutical plant over a month, comparable counts to the traditional methods were obtained within 24 hours compared to 48 to 72 hours with the other methods. The effectiveness of the memory device used for the isolation of colonies for characterization was demonstrated by comparing the number and pattern of the positive wells in the MicroCount plates with the isolation of colonies on the microbial count agar plates. The recovery on agar plates, although slightly higher, was not statistically different to the MicroCount plates. The predominated microorganisms isolated using all three methods were Ralstonia pickettii, Bacillus sphaericus, Stenotrophomonas maltophia, and a Staphylococcus species.

Mark B. et al. *[Current use and outcomes of intraaortic balloon counterpulsation in routine cardiology].* Med Klin. 2000; 95(8) : 429-34.p Abstract: BACKGROUND: Intraaortic balloon counterpulsation (IABC) is an established technique for temporary support of the left ventricular function. However, less is known about the current use and outcome of IABC in daily clinical practice. PATIENTS AND METHOD: From July 1995 to May 1999 all patients receiving an IABC in the Department of Cardiology of the Heart Center Ludwigshafen were included in a consecutive registry and follow-up data were obtained. RESULTS: Sixty-six patients (mean age 65 years, 64% male) received an IABC during the registration period. In 95% of cases the indication for IABC was the presence of cardiogenic shock. The shock was due to an acute myocardial infarction in 83%, other reasons were less frequent (< or = 5%). Total inhospital mortality was 48%. Patients in shock due to myocardial infarction (53%) showed the highest mortality. During follow-up (median 20 months) another 21% died. Complications occurred in 20% of patients under IABC, including vascular complications in 12%, infections in 5% and major bleedings in 3%. There was no difference between mortality among patients with complications and total mortality. CONCLUSION: Main indication for IABC in daily practice is the presence of cardiogenic shock (95%), dominantly due to myocardial infarction (83%). Despite IABC therapy, half of these patients die during the hospital stay. High mortality of cardiogenic shock in myocardial infarction with pharmacological therapy justifies IABC treatment with regard to a rate of complications of 20%.

Markewitz A. et al. *Current practice of peri- and postoperative antibiotic therapy in cardiac surgery in Germany. Working Group on Cardiothoracic Surgical Intensive Care Medicine of the German Society for Thoracic and Cardiovascular Surgery.* Thorac Cardiovasc Surg. 1999; 47(6) : 405-10.p Abstract: BACKGROUND: The increasing development of antimicrobial resistance of common bacterial pathogens presents one of the most significant challenges to clinical medicine, particularly intensive care medicine. One factor which has contributed to this development is the (over)use of antibiotic treatment. Therefore the objective of this study was to scrutinize the current practice of empiric antibiotic therapy in cardiac surgery in Germany for 1) perioperative prophylaxis and 2) postoperative therapy prior to the availability of susceptibility patterns for the infecting pathogen. METHODS: A questionnaire was sent to all centers performing cardiac surgery in Germany. Questions referred to drugs used as well as dosage, homogeneity and duration of antibiotic prophylaxis, time and/or reason for changing this regimen, drugs used for first-, second-, and third-line empiric postoperative antibiotic treatment, and homogeneity of antibiotic usage. RESULTS: All but 3 institutions (96.3%) answered. 1. Perioperative prophylaxis: All but 4 centers (94%) use first- (n = 32 = 43%) or second-generation cephalosporins (n = 38 = 51%) most commonly for 24 hours (n = 60 = 81%). Prophylaxis never exceeds 3 days. 74% of all institutions (n = 55) use the same antimicrobial agent for all cardiac procedures performed, while 26% (n = 19) change their regimen in selected patient groups, most commonly for heart transplantation. The entire prophylaxis is changed mainly according to susceptibility patterns (n = 63 = 85%), 7 centers (10%) change according to a fixed time schedule, while 4 institutions (5%) never change the antimicrobial drug. 2. Empiric postoperative therapy: A total of 29 different antibiotics out of 8 subclasses are used. No major differences between 1st-, 2nd-, and 3rd-line therapy could be detected, with the exception of a decreasing usage of beta-lactams (carbapenems excluded) from 60% in 1st-line to 23% in 3rd-line therapy and an increasing usage of glycopeptides from 5% in 1st-line to 18% in 3rd-line therapy. 41 institutions (55%) use the same antibiotic regimen on the intensive care unit and the normal ward, 9 centers (12%) use the same drug for perioperative prophylaxis and postoperative therapy, and 12 institutions (16%) prescribe a combination therapy. CONCLUSIONS: Perioperative prophylaxis in cardiac surgery in Germany is performed on a relatively uniform basis and at low cost. The heterogeneity of antibiotic regimens for postoperative therapy may indicate the need for recommendations and/or guidelines for this type of treatment. The indications for the usage of reserve antibiotics, e.g. vancomycin, implying the possible risk of creating pathogens with untreatable resistance patterns, as well as strategies aimed at preventing the development of resistance should be the subject of further discussions.

Markowicz P. et al. *Multicenter prospective study of ventilator-associated pneumonia during acute respiratory distress syndrome. Incidence, prognosis, and risk factors. ARDS Study Group.* Am J Respir Crit Care Med. 2000; 161(6) : 1942-8.p Abstract: We investigated the incidence, risk factors for, and outcome of ventilator-associated pneumonia (VAP) in patients with acute respiratory distress syndrome (ARDS). We compared 134 patients with ARDS with 744 patients without ARDS on mechanical ventilation. Fiberoptic bronchoscopic examination and quantitative bacterial cultures (protected brush or catheter sampling [threshold: 10(3) cfu/ml], or bronchoalveolar lavage [threshold: 10(4) cfu/ml]) were used to diagnose pneumonia. VAP occurred in 49 patients (36.5%). The incidence of pneumonia was 23% (173 of 744 patients) among patients without ARDS ($p < 0.002$). Nonfermenting gram-negative rods caused significantly more pneumonia in ARDS patients. Mortality rates were identical in ARDS patients with (28 of 49 patients, 57%) and without (50 of 85 patients, 59%) pulmonary infection ($p = 0.8$). VAP resulted in a considerable increase in attributable time on mechanical ventilation of both the

overall population of ARDS patients and of survivors. Both the use of sucralfate (adjusted odds ratio [OR]: 4. 42; 95% confidence interval [CI]: 2.01 to 9.7, p = 0.0002) and the duration of exposure to sucralfate (adjusted OR: 1.206; 95% CI: 1. 095 to 1.328, p = 0.0002) were associated with an increased risk of VAP during ARDS. VAP considerably prolongs the time on mechanical ventilation without affecting survival. Patients given sucralfate may be at greater risk of developing pulmonary infection during ARDS.

Marley E.F. et al. *Evaluation of E-Test for determination of antimicrobial MICs for Pseudomonas aeruginosa isolates from cystic fibrosis patients.* J Clin Microbiol. 1995; 33(12) : 3191-3.p Abstract: We determined the E-Test and National Committee for Clinical Laboratory Standards standardized agar dilution MICs of ceftazidime, ciprofloxacin, piperacillin, and tobramycin for Pseudomonas aeruginosa during tests of 100 rough and mucoid P. aeruginosa isolates from cystic fibrosis patients. The levels of agreement (+/- 1 log2 dilution) between quantitative E-Test and agar dilution MIC results were 80, 97, 73, and 89% for ceftazidime, ciprofloxacin, piperacillin, and tobramycin, respectively. Comparison of the results after converting the MIC data to qualitative categories (susceptible, intermediate, and resistant) yielded levels of agreement of 84, 96, 88, and 93% for the same agents, respectively. Of the 39 qualitative discrepancies, 36 were minor and 3 were very major. We conclude that use of the E-Test is easier and more practical than use of the agar dilution method for most laboratories and that the E-Test furnishes results which are at least as accurate as those obtained by the agar dilution method. However, the higher cost of the E-Test method would likely discourage most laboratories from selecting it over disk diffusion for routine antimicrobial susceptibility testing of P. aeruginosa isolates from cystic fibrosis patients.

Marques M.B. *Doenças infecciosas emergentes no reino da complexidade: implicaçoes para as políticas científicas e tecnológicas.* Cad. saúde pública. 1995; 11(3) : 361-88.p Abstract: Alienta que a disseminação global de novas doenças infecciosas está afetando a previsibilidade implícita nos enfoques dominantes da transição em saúde. Analisa, do ponto-de-vista epistemológico e político, enfoques alternativos para enfrentar estas novas tendências epidemiológicas globais. (AU).

Marret E. et al. *[Diagnosis of a persistent left superior vena cava in the operating room during a central venous catheterization].* Ann Fr Anesth Reanim. 2000; 19(3) : 191-4.p Abstract: A 2-year-old boy was admitted for surgical excision of a hepatoblastome. A central venous catheter was inserted by a subclavian approach, without difficulty. The chest radiograph showed the catheter positioned along the left heart border. The diagnosis of persistent left superior vena cava was suspected after analysis of the central venous pressure curve. An postoperative chest X-ray confirmed the diagnosis. The catheter was maintained for five days without any complication.

Marrie T.J. *Unusual pathogens for respiratory infections.* Curr Opin Pulm Med. 1995; 1(3) : 171-6.p Abstract: There are a large number of unusual pathogens for respiratory tract infections. The list of such pathogens is continuously changing because of changes in our environment, changes in the host (especially immunosuppression), and advances in medical technology, which allow minimally or otherwise nonpathogenic microorganisms to cause respiratory tract infections. Changes may also occur in common microorganisms such as penicillin-resistant pneumococci or multidrug-resistant Mycobacterium tuberculosis. Finally, usual pathogens may result in unusual manifestations.

Marshall S.A. et al. *Comparative antimicrobial activity of piperacillin-tazobactam tested against more than 5000 recent clinical isolates from five medical centers. A reevaluation after five years.* Diagn Microbiol Infect Dis. 1995; 21(3) : 153-68.p Abstract: Piperacillin combined with tazobactam at a fixed concentration (4 micrograms/ml) and a ratio (8:1) was tested against 5,029 aerobic isolates and 447 fastidious organisms, including anaerobes. Among the Enterobacteriaceae, > 95% inhibition was shared only by imipenem (99.1% at < or = 4 micrograms/ml), and some newer cephalosporins (95.1% - 99.8% at < or = 8 micrograms/ml), and piperacillin-tazobactam (95.8% at < or = 16/4 micrograms/ml). Piperacillin-tazobactam was the most active agent tested against nonenteric Gram-negative bacilli (93.5% at < or = 8 micrograms/ml). Ampicillin-sulbactam was the most active agent against staphylococci (95.0% at < or = 8 micrograms/ml), followed by imipenem (91.8%), piperacillin-tazobactam (89.3% at < or = 8/4 micrograms/ml), and cefepime (86.2% at < or = 8 micrograms/ml). Against the enterococci, only ampicillin (93.0% at < or = 8 micrograms/ml) with or without sulbactam, piperacillin (91.0% at < or = 16 micrograms/ml) with or without tazobactam, and imipenem (91.0%) had acceptable activity. Piperacillin-tazobactam and imipenem were the most active drugs tested against all aerobic isolates, inhibiting 93.5% of isolates each. Piperacillin-tazobactam inhibited all fastidious isolates tested, including Haemophilus influenzae (MIC90, 0.094/4 micrograms/ml), Moraxella catarrhalis (MIC90, 0.064/4 micrograms/ml), Neisseira gonorrhoeae (MIC90, < or = 0.016/4 micrograms/ml), and Streptococcus pneumoniae (all MICs, < or = 4/4 micrograms/ml). Against the anaerobic isolates, the most broad-spectrum antimicrobial agents tested were imipenem (100.0%), piperacillin-tazobactam (99.5% at < or = 32/4 micrograms/ml), metronidazole (98.4% at < or = 8 micrograms/ml), and ticarcillin-clavulanic acid (95.1% at < or = 32/2 micrograms/ml). These results are nearly identical to a previous study involving the same five medical centers in 1989. Piperacillin-tazobactam appears to remain a highly effective beta-lactamase inhibitor combination with a wide empiric spectrum and potency in teaching hospitals.

Marshall S.A. et al. *Antimicrobial activity of SCH27899 (Ziracin), a novel everninomicin derivative, tested against Streptococcus spp.: disk diffusion/etest method evaluations and quality control guidelines. The Quality Control Study Group.* Diagn Microbiol Infect Dis. 1999; 33(1) : 19-25.p Abstract: To combat the increasing rates of penicillin resistance among pneumococci and viridans group streptococci, new Gram-positive active agents are needed to avoid the overuse of vancomycin. SCH27899 is an everninomicin derivative with strong activity against glycopeptide-resistant enterococci, oxacillin-resistant staphylococci, and penicillin-resistant streptococci. This study tests the in vitro activity of SCH27899 against 304 strains of streptococci and evaluates the quality of the agar dilution, broth microdilution, disk diffusion, and Etest methods for this antimicrobial agent. Quality-control (QC) ranges for SCH27899 are also proposed. SCH27899 broth microdilution MICs among the penicillin-susceptible and -resistant streptococci tested ranged from < or = 0.008-0.5 microgram/mL. Organism groups with their respective MIC90s were as follows: Streptococcus pneumoniae (100 strains) and beta-haemolytic streptococci (70 strains), 0.12 microgram/mL; Streptococcus bovis (10 strains), 0.25 microgram/mL; and viridans group streptococci (124 strains), 0.5 microgram/mL. Etest SCH27899 MICs correlated well with broth microdilution MICs (92% +/- one log2 dilution, 98% +/- two log2 dilutions). Agar dilution SCH27899 MICs correlated well with broth microdilution MICs, but a shift toward slightly higher agar dilution MICs was attributed to difficulties in reading trailing endpoints with this method. Three concentrations (2.5, 5, and 10 micrograms) of SCH27899 were used for the disk diffusion method with small inhibition zone diameters (range, 11 to 19 mm) and limited variation between diameters (+/- 2 mm) as a result, both products of this compound's high molecular weight and poor diffusion through agar mediums. Proposed control ranges for SCH27899 when testing S. pneumoniae ATCC 49619 from a nine-center (30 tests per center) quality-control trial are < or = 0.016 to 0.032 microgram/mL for Etest, and 0.008 to 0.032 microgram/mL for broth microdilution tests from an earlier study. Because of the limited diffusion ability and bacteriostatic nature of SCH27899, MICs should be read at 80% of inhibition with agar in vitro systems (Etest, agar dilution), and the disk diffusion method is not recommended.

Marshall S.A. et al. *Staphylococcus aureus and coagulase-negative staphylococci from blood stream infections: frequency of occurrence, antimicrobial susceptibility, and molecular (mecA) characterization of oxacillin resistance in the SCOPE program*. Diagn Microbiol Infect Dis. 1998; 30(3) : 205-14.p Abstract: Staphylococci are major causes of nosocomial blood stream infection. The recently completed SCOPE Surveillance Program found that coagulase-negative staphylococci (CoNS) and Staphylococcus aureus were the first and second most common etiologic agents, respectively, causing nosocomial blood stream infection in the USA. The frequency of oxacillin resistance was 68% among 1553 strains of CoNS and 26% among 787 strains of S. aureus in this study. Extended susceptibility profiles were generated for a subset of 150 S. aureus and 300 CoNS against 16 antimicrobial agents. Oxacillin-susceptible strains of both CoNS and S. aureus were uniformly susceptible to beta-lactam agents with the exception of ampicillin and penicillin. Oxacillin-susceptible S. aureus were also highly susceptible to the fluoroquinolones, aminoglycosides, and trimethoprim/sulfamethoxazole. The oxacillin-susceptible CoNS were less susceptible to these agents, and only glycopeptides were reliably active against oxacillin-resistant strains. PCR detection of the mecA gene was used to scrutinize current NCCLS interpretive breakpoint MICs for determining susceptibility or resistance to oxacillin. We found complete concordance between the presence or absence of mecA and the NCCLS oxacillin interpretive breakpoint categories for S. aureus. In contrast, the NCCLS breakpoints for oxacillin significantly underestimate the degree of true oxacillin resistance among CoNS. Using the presence of mecA as the reference standard, we detected 15.7% false susceptibility to oxacillin using a MIC susceptible breakpoint concentration of < or = 2 micrograms/mL. Lowering the oxacillin MIC breakpoint to < or = 0.25 microgram/mL for CoNS would greatly improve the accuracy of the MIC test performance. We found that both the current oxacillin disk test and the 30-microgram ceftizoxime disk test functioned quite well in predicting those strains of CoNS that contain mecA. These studies have demonstrated both a high level of antimicrobial resistance among nosocomial blood stream isolates of staphylococci as well as significant problems with the current NCCLS breakpoints for oxacillin when testing CoNS.

Marshall W.F. et al. *The cephalosporins.* Mayo Clin Proc. 1999; 74(2) : 187-95.p Abstract: The cephalosporins are a large group of related beta-lactam antimicrobial agents. Favorable attributes of the cephalosporins include low rates of toxicity, relatively broad spectrum of activity, and ease of administration. Various cephalosporins are effective for treatment of many conditions, including pneumonia, skin and soft tissue infections, bacteremia, and meningitis. Differences among the numerous cephalosporin antimicrobial agents are sometimes subtle; however, an understanding of these differences is essential for optimal use of these agents. As a result of widespread use of cephalosporins, bacterial resistance to these drugs is increasingly common. New, fourth-generation agents (such as cefepime) offer an alternative for the treatment of infections caused by some drug-resistant microorganisms.

Martin E. et al. *Evaluation of the Epsilometer test (E test) for testing the susceptibility of coagulase-negative staphylococci to teicoplanin*. J Antimicrob Chemother. 1995; 36(1) : 83-91.p Abstract: The antimicrobial susceptibilities of 118 clinical isolates of coagulase-negative staphylococci to teicoplanin were determined by disc diffusion and the Epsilometer test (E test) and the results were compared with the MICs determined by the agar dilution method of the National Committee for Clinical Laboratory Standards (NCCLS). There was a poor correlation of r = 0.5 between the zone diameters of inhibition and agar dilution MICs and 10 and four of the 11 isolates for which the MICs were > or = 32 mg/L were misclassified as susceptible by the disc test after applying the interpretative criteria of the NCCLS and the Comite de l'Antibiogramme de la Societe Francaise de Microbiologie (CASFM), respectively. The E test tended to result in MICs that were lower than those determined by agar dilution and only 66% of MIC were within +/- 1 log2 dilution of each other. Only one of 11 resistant strains was detected by the E test and, although there was no false resistance, six resistant strains were misclassified as susceptible after applying the criteria of the NCCLS as were four such isolates when the criteria of the CASFM were employed, probably as a result of using too light an inoculum. Disc diffusion is not a reliable means of determining the susceptibility of coagulase-negative staphylococci but might be replaced by the E-test provided that discrepant results can be resolved by using a denser inoculum.

Martin S.J. et al. *Levofloxacin and sparfloxacin: new quinolone antibiotics.* Ann Pharmacother. 1998; 32(3) : 320-36.p Abstract: OBJECTIVE: To discuss the pharmacology, pharmacokinetics, spectrum of activity, clinical trials, and adverse effects of levofloxacin and sparfloxacin, two new fluoroquinolone antibiotics. DATA SOURCES: Literature was identified by a MEDLINE search from January 1985 to September 1997. Abstracts and presentations were identified by review of program abstracts from the Interscience Conference on Antimicrobial Agents and Chemotherapy from 1988 to 1996. STUDY SELECTION: Randomized, controlled clinical studies were selected for evaluation; however, uncontrolled studies were included when data were limited for indications approved by the Food and Drug Administration (FDA). In vitro data were selected from comparison trials whenever available. Only in vitro trials that provided data on the minimum inhibitory concentrations required to inhibit 90% of isolates were used. Data from North American studies were selected whenever available. DATA EXTRACTION: Data were evaluated with respect to in vitro activity, study design, clinical and microbiologic outcomes, and adverse drug reactions. DATA SYNTHESIS: Levofloxacin and sparfloxacin are active against pathogens frequently involved in community-acquired upper and lower respiratory tract infections, including Streptococcus pneumoniae, Haemophilus influenzae, Moraxella catarrhalis, Mycoplasma pneumoniae, Legionella pneumophila, and Chlamydia pneumoniae. Both compounds have enhanced activity compared with ciprofloxacin against most gram-positive bacteria, including enterococci, streptococci, and staphylococci, and retain good activity against most Enterobacteriaceae and Pseudomonas aeruginosa. Sparfloxacin has greater anaerobic activity than levofloxacin, which is more active than ciprofloxacin or ofloxacin. Although many clinical studies are available only in abstract form, the clinical data demonstrate that these new quinolones are effective for most community-acquired upper and lower respiratory tract infections, urinary tract infections, gonococcal and nongonococcal urethritis, and skin and skin structure infections. FDA-approved indications are limited for both compounds to date. CONCLUSIONS: Levofloxacin and sparfloxacin have improved gram-positive activity compared with that of older fluoroquinolones, and are administered once daily. Sparfloxacin-associated photosensitivity may limit its therapeutic usefulness. Clinical trials confirm that these agents are as effective as traditional therapies for the management of community-acquired pneumonia, acute exacerbations of chronic bronchitis, sinusitis, urinary tract infections, acute gonococcal and nongonococcal urethritis, and skin and skin structure infections.

Martineau F. et al. *Development of a rapid PCR assay specific for staphylococcus saprophyticus and application to direct detection from urine samples.* J Clin Microbiol. 2000; 38(9) : 3280-4.p Abstract: Staphylococcus saprophyticus is one of the most frequently encountered microorganisms associated with acute urinary tract infections (UTIs) in young, sexually active female outpatients. Conventional identification methods based on biochemical characteristics can efficiently identify S. saprophyticus, but the rapidities of these methods need to be improved. Rapid and direct identification of this bacterium from urine samples would be useful to improve time required for the diagnosis of S. saprophyticus infections in the clinical microbiology laboratory. We have developed a PCR-based assay for the specific detection of S. saprophyticus. An arbitrarily primed PCR amplifica-

tion product of 380 bp specific for S. saprophyticus was sequenced and used to design a set of S. saprophyticus-specific PCR amplification primers. The PCR assay was specific for S. saprophyticus when tested with DNA from 49 gram-positive and 31 gram-negative bacterial species. This assay was also able to amplify efficiently DNA from all 60 strains of S. saprophyticus from various origins tested. This assay was adapted for direct detection from urine samples. The sensitivity levels achieved with urine samples was 19 CFU with 30 cycles of amplification and 0.5 CFU with 40 cycles of amplification. This PCR assay for the specific detection of S. saprophyticus is simple and rapid (approximately 90 min, including the time for urine specimen preparation).

Martinez A. et al. *Sliding motility in mycobacteria.* J Bacteriol. 1999; 181(23) : 7331-8.p Abstract: Mycobacteria are nonflagellated gram-positive microorganisms. Previously thought to be nonmotile, we show here that Mycobacterium smegmatis can spread on the surface of growth medium by a sliding mechanism. M. smegmatis spreads as a monolayer of cells which are arranged in pseudofilaments by close cell-to-cell contacts, predominantly along their longitudinal axis. The monolayer moves away from the inoculation point as a unit with only minor rearrangements. No extracellular structures such as pili or fimbriae appear to be involved in this process. The ability to translocate over the surface correlates with the presence of glycopeptidolipids, a mycobacterium-specific class of amphiphilic molecules located in the outermost layer of the cell envelope. We present evidence that surface motility is not restricted to M. smegmatis but is also a property of the slow-growing opportunistic pathogen M. avium. This form of motility could play an important role in surface colonization by mycobacteria in the environment as well as in the host.

Martinez-Arroyo L. et al. *Fatal Mycobacterium avium complex disease in a patient with acute nonlymphoblastic leukemia.* J Pediatr Hematol Oncol. 1996; 18(2) : 218-22.p Abstract: PURPOSE: The objective of this article was to present the diagnosis of a fatal infection by Mycobacterium avium complex (MAC) in a child with acute myelogenous leukemia, a disease rarely reported in non-HIV infected children. METHODS: Specific identification of MAC was made by culture in BACTEC system from an open lung biopsy. RESULTS: A 5-year-old girl diagnosed with acute nonlymphoblastic leukemia was admitted because of fever during the maintenance phase after achieving a complete remission of her malignancy. A mild dry cough started on day 4 of admission, and a chest roentgenogram revealed a pulmonary infiltrate. An insidious respiratory distress developed and mechanical ventilation was undertaken. An open-lung biopsy, carried out on day 10 of ventilatory support, revealed acid-fast bacilli subsequently grown as MAC. In spite of combined antimycobacterial treatment, the patient followed a downhill course and died on day 41 of hospitalization. CONCLUSION: This report describes a new case of fatal MAC infection in an immunocompromised, non-HIV infected child. MAC must be added to the list of infectious microorganisms that can infect children with acute nonlymphoblastic leukemia. As modern immunosuppressive therapeutic modalities evolve, it is likely that MAC will become a more common and recognized pathogen in the immunocompromised child.

Martinez J.A. et al. *Risk factors for oxacillin/methicillin resistance in coagulase-negative staphylococci.* J Hosp Infect. 1997; 35(4) : 295-9.p Abstract: The clinical variables associated with isolation of oxacillin- and methicillin-resistant, coagulase-negative staphylococci (CNS) from blood cultures of hospitalized patients were studied. One hundred CNS strains (49 oxacillin-susceptible; 51 oxacillin-resistant) isolated consecutively from one of two or more sets of blood cultures were collected. Only two variables were independently associated with recovery of oxacillin/methicillin-resistant strains by a multivariate analysis: length of hospital stay > 10 days (OR 5.2, 95% CI = 1.7-15.7), and administration of antimicrobial agents in the previous 14 days (OR 4.5, 95% CI = 1.7-11.7). Analysis of the antibiotics administered indicated that only beta-lactams were associated with a statistically significant risk of resistance to oxacillin/methicillin (OR of beta-lactams vs no antibiotics = 6.94, 95% CI = 1.9-25.3; OR of non-beta-lactams vs no antibiotics = 2.64, 95% CI = 0.8-8.3). Length of hospital stay (especially > 10 days) and prior administration of antimicrobial agents (mainly beta-lactams) independently predicted the presence of oxacillin/methicillin-resistant CNS in blood cultures.

Martinez Lacasa J. et al. *[The role of carbapenems in the treatment of nosocomial infection].* Enferm Infecc Microbiol Clin. 1997; 15 Suppl 1 : 78-85.p Abstract: Carbapenems are active beta-lactam antibiotics versus most of the gram positive and gram negative microorganisms and anaerobes although their activity is lacking in the case of Staphylococcus sp. resistant to methicillin, Enterococcus faecium and Streptococcus pneumoniae with high resistance to penicillin and some gram negative bacilli which naturally produce an methaloenzyme able to hydrolyze them such as Stenotrophomonas maltophilia. Imipenem, the first synthetized carbapenem requires administration with cilastatin to avoid inactivation by renal dehydropeptidase 1. Meropenem does not require being taken with the renal enzyme inhibitor, with its activity being similar to that of imipenem. In abdominal infection the carbapenems have shown to be the authentic monotherapy in this type of infections being as effective as the different schedules of antibiotic associations normally used. Treatment with carbapenems in bacterial meningitis should be currently limited to the cases produced by gram negative bacilli producers of wide spectrum beta-lactamases (WSBL), cases of meningitis by Pseudomonas aeruginosa or gram negative bacilli producers of inducible cephalosporinase. Meropenem is the carbapenem of choice probably in these cases because the carbapenems are often the only active antibiotics and meropenem, specifically, does not have the risk of convulsions observed with imipenem-cilastatin. The carbapenems have shown to be useful in skin and soft tissue infections as well as in obstetric and gynecologic infections as monotherapy similar to the schedules of the currently used antibiotic associations. In the case of nosocomial pneumonias, all the studies have evaluated the carbapenems in monotherapy as useful and effective, specially in the case of pneumonia by gram negative bacilli. Finally, in non filiated nosocomial sepsis and specially in the case of neutropenic patients, the use of carbapenems is particularly attractive in gram negative sepsis in intensive care units. The appearance in the last few years of strains of gram negative bacilli, producers of wide spectrum beta-lactamase or stable repressed hyperproducers of class I chromosomic cephalosporinase, as well as other multiresistant gram negative bacilli, such as Acinetobacter baumanii make the carbapenems, in many cases, the only effective antibiotic in this type of infections.

Martinez-Martinez L. et al. *In vivo selection of porin-deficient mutants of Klebsiella pneumoniae with increased resistance to cefoxitin and expanded-spectrum-cephalosporins.* Antimicrob Agents Chemother. 1996; 40(2) : 342-8.p Abstract: Four Klebsiella pneumoniae isolates (LB1, LB2, LB3, and LB4) with increased antimicrobial resistance were obtained from the same patient. The four isolates were indistinguishable in biotype, plasmid content, lipopolysaccharide, and DNA analysis by pulse-field gel electrophoresis. Isolate LB1 made TEM-1 and SHV-1 beta-lactamases. Isolates LB2, LB3, and LB4 produced SHV-5 in addition to TEM-1 and SHV-1. MICs of cefoxitin, ceftazidime, and cefotaxime against LB1 were 4, 1, and 0.06 micrograms/ml, respectively. MICs of ceftazidime against K. pneumoniae LB2, LB3, and LB4 were > 256 micrograms/ml, and those of cefotaxime were 2, 4, and 64 micrograms/ml, respectively. MICs of cefoxitin against K. pneumoniae LB2 and LB3 were 4 micrograms/ml, but that against K. pneumoniae LB4 was 128 micrgrams/ml. K. pneumoniae LB4 could transfer resistance to ceftazidime and cefotaxime, but not that to cefoxitin, to Escherichia coli. Isolate LB4 and cefoxitin-resistant laboratory mutants lacked an outer membrane protein of about 35 kDa whose molecular mass, mode of isolation, resistance to proteases, and reaction with a porin-specific antiserum suggested that it was

a porin. MICs of cefoxitin and cefotaxime reverted to 4 and 2 micrograms/ml, respectively, when isolate LB4 was transformed with a gene coding for the K. pneumoniae porin OmpK36. We conclude that the increased resistance to cefoxitin and expanded-spectrum cephalosporins of isolate LB4 was due to loss of a porin channel for antibiotic uptake.

Martinez-Martinez L. et al. *Comparison of E-test with broth microdilution and disk diffusion for susceptibility testing of coryneform bacteria.* J Clin Microbiol. 1995; 33(5) : 1318-21.p Abstract: The susceptibilities of 135 coryneform bacteria isolated from clinical samples to ampicillin (AMP), cephalothin (CR), cefoxitin (FOX), cefotaxime (CTX), erythromycin (E), ciprofloxacin (CIP), tetracycline (TE), amikacin (AK), vancomycin (VA), and rifampin (R) were determined by disk diffusion, broth microdilution, and the E-test. The following species (number of isolates in parentheses) were included: Corynebacterium urealyticum (30), Corynebacterium minutissimum (20), coryneform CDC group ANF-1 (20), Corynebacterium striatum (20), Corynebacterium jeikeium (15), coryneform CDC group I2 (8), Listeria monocytogenes (7), Corynebacterium xerosis (5), and other coryneform bacteria (10). Agreement within one twofold dilution between the E-test and broth microdilution was 31% (VA), 64% (AK), 71% (CTX), 77% (FOX and CIP), 79% (TE), 84% (AMP), 87% (E), and 88% (CR and R). For the 1,350 combinations of microorganisms and antimicrobial agents, 85 (6.3%) discrepancies in interpretive category were found (4.2% minor, 1.2% major, and 0.9% very major). Seventy (5.1%) disagreements in interpretive category were found between disk diffusion and the E-test (3.8% minor, 0.4% major, and 0.9% very major), and 85 (6.3%) disagreements were found between microdilution (reference method) and disk diffusion (4.2% minor, 0.5% major, and 1.5% very major). MICs obtained with the E-test were highly reproducible. No category discrepancy was observed for VA, despite quantitative results. Considering interpretive categories, there is a good overall agreement between the three methods studied here, but further evaluation of current methodologies for susceptibility testing is required when considering coryneform bacteria and determination of quantitative activity of antimicrobial agents.

Martinez-Martinez L. et al. *Quinolone resistance from a transferable plasmid.* Lancet. 1998; 351(9105) : 797-9.p Abstract: BACKGROUND: Bacteria can mutate to acquire quinolone resistance by target alterations or diminished drug accumulation. Plasmid-mediated resistance to quinolones in clinical isolates has been claimed but not confirmed. We investigated whether a multiresistance plasmid could transfer resistance to quinolones between bacteria. METHODS: We transferred resistance between strains by conjugation. The resistance plasmid was visualised in different hosts by agarose-gel electrophoresis. We determined the frequency of spontaneous mutations to ciprofloxacin or nalidixic-acid resistance in Escherichia coli strains, with or without the quinolone resistance plasmid. FINDINGS: A multiresistance plasmid (pMG252) from a clinical isolate of Klebsiella pneumoniae was found to increase quinolone resistance to minimum inhibitory concentrations (MICs) as high as 32 microg/mL for ciprofloxacin when transferred to strains of K pneumoniae deficient in outer-membrane porins. Much lower resistance was seen when pMG252 was introduced into K pneumoniae or E coli strains with normal porins. The plasmid had a wide host range and expressed quinolone resistance in other enterobacteriaceae and in Pseudomonas aeruginosa. From a plasmid-containing E coli strain with ciprofloxacin MIC of 0.25 microg/mL and nalidixic-acid MIC of 32 microg/mL, quinolone-resistant mutants could be obtained at more than 100 times the frequency of a plasmid-free strain, reaching MICs for ciprofloxacin of 4 microg/mL and for nalidixic acid of 256 microg/mL. INTERPRETATION: Transferable resistance to fluoroquinines and nalidixic acid has been found in a clinical isolate of K pneumoniae on a broad host range plasmid. Although resistance was low in wild-type strains, higher levels of quinolone resistance arose readily by mutation. Such a plasmid can speed the development and spread of resistance to these valuable antimicrobial agents.

Martinez R. et al. *Chromobacterium violaceum infection in Brazil. A case report.* Rev Inst Med Trop Sao Paulo. 2000; 42(2) : 111-3.p Abstract: We report the second case of infection with Chromobacterium violaceum that occurred in Brazil. A farm worker living in the State of Sao Paulo presented fever and severe abdominal pain for four days. At hospitalization the patient was in a toxemic state and had a distended and painful abdomen. Chest X-ray and abdominal ultrasound revealed bilateral pneumonia and hypoechoic areas in the liver. The patient developed failure of multiple organs and died a few hours later. Blood culture led to isolation of C. violaceum resistant to ampicillin and cephalosporins and sensitive to chloramphenicol, tetracyclin, aminoglicosydes, and ciprofloxacin. Autopsy revealed pulmonary microabscesses and multiple abscesses in the liver. The major features of this case are generally observed in infections by C. violaceum: rapid clinical course, multiple visceral abscesses, and high mortality. Because of the antimicrobial resistance profile of this Gram-negative bacillus, for appropriate empirical antibiotic therapy it is important to consider chromobacteriosis in the differential diagnosis of severe community infections in Brazil.

Martinez R. et al. *Sensibilidade bacteriana a antimicrobianos, usados na prática médica à Ribeirão PretoàSP à 1994.* Medicina (Ribeirão Preto). 1996; 29(2/3) : 278-84.p Abstract: Apresentaàse a situação da susceptibilidade bacteriana a antimicrobianos, em amostras isoladas em 1994, no Hospital das Clínicas da Faculdade de Medicina de Ribeirão PretoàUSP. A resistência do Staphylococcus aureus a oxacilina foi verificada em 17 por cento das amostras de infecções da comunidade, e em 51 por cento dos casos hospitalares. Os valores correspondentes para o Staphylococcus epidermidis foram, respectivamente, 19 por cento e 29 por cento. A resistência in vitro a penicilina foi observada em 7 por cento das amostras de pneumococo, e em 20 por cento das amostras de enterococo. Com exceção de poucas amostras, todos os cocos Gramàpositivos eram sensíveis a vancomicina e teicoplanina. Com relação aos bacilos Gramànegativos, a sensibilidade in vitro das enterobactérias foi baixa para a ampicilina, carbenicilina e cotrimoxazole (26 a 53 por cento), intermediária para cefalotina, cloranfenicol e cefoxitina (64 a 82 por cento) e alta para as cefalosporinas de terceira geração, amicacina, fluoroquinolonas, aztreonam e imipenem (93 a 99 por cento). Acima de 90 por cento das amostras de Pseudomonas aeruginosa foram sensíveis a cefatazidina, aztreonam e imipenem. O Acinetobacter calcoaceticus, causa frequente de infecção hospitalar, mostrou alta sensibilidade (98 por cento) ao imipenem, porém resistência acentuada a outros antiinfecciosos. Concluiàse comentando sobre a escolha de antimicrobianos para o tratamento de infecções comunitárias e hospitalares. (AU).

Martino R. et al. *Bacteraemia caused by non-glucose-fermenting gram-negative bacilli and Aeromonas species in patients with haematological malignancies and solid tumours.* Eur J Clin Microbiol Infect Dis. 2000; 19(4) : 320-3.p Abstract: The clinical characteristics and outcome of bacteraemia caused by non-glucose-fermenting gram-negative bacilli and Aeromonas spp. were examined in 115 adults with haematological malignancies or solid tumours. The most aggressive pathogens were Pseudomonas aeruginosa, Stenotrophomonas maltophilia, Aeromonas spp., Acinetobacter spp. and Burkholderia cepacia, all of which caused either septic syndrome or pneumonia in more than 40% of cases. Pseudomonas aeruginosa was involved less often in catheter-related bacteraemia than other species. Polymicrobial bacteraemia (n=28) was more often catheter-related than monomicrobial bacteraemia and more often required catheter removal for definitive cure. The most important predictors of catheter-related bacteraemia and its outcome were polymicrobial infection, the presence of pneumonia or septic syndrome and the species involved.

Martino T.K. et al. *Identification of bacteria in water for pharmaceutical use.* Rev Latinoam Microbiol. 1998; 40(3-4) : 142-50.p Abstract:

Different systems for the obtention of water used in Biopharmaceutical Industry were characterized from the bacteriological point of view. Determination of aerobic mesophilic microorganisms was performed; as well as the isolation of contaminant microorganisms for what the techniques of membrane filtration was used. For the identification of the more representative species there were made conventional biochemical tests and quick systems: API. The results show that water serving as tap water for purification systems fulfill with the microbiological requirements to this kind of water. All the isolated microorganisms were gram-negative bacteria characteristics of this environment: Pseudomonas putida, Xanthomonas maltophilia, Aeromonas salmonicida ssp. salmonicida, Flavimonas coryzihabitans and Acinetobacter iwoffi. The ultrafiltration and distillation tested systems fulfill with the established microbiological limits, except for deionization and distilled water storing systems. The isolation showed that approximately the 76.9% were of Gram-negative bacteria, the 14.6% of Gram-positive cocci and the 8.5% Gram-positive sporulated bacilli. The most representative genus of purified water were: Pseudomonas, with the higher percent of incidence, Staphylococcus, Bacillus, Flavobacterium, Sphingomonas, Aeromonas and Agrobacterium.

Martins R. et al. *[Infections of cerebrospinal fluid shunts in children. Review of 100 infections in 87 children].* Arq Neuropsiquiatr. 1997; 55(1) : 75-81.p Abstract: An analysis of 100 infections in 87 children treated with shunts in the period of 1982 to 1995 is reported. The clinical presentation has been more frequently secondary to inflammatory signals. Staphylococcus were the most frequently microorganisms found. Infection by Gram negative agents was more aggressive and directly related with failure of therapy. Treatment included since only systemic antibiotics until withdrawal of shunt with use of systemic and intrathecal antibiotics. The best therapeutic results were obtained with withdrawal of shunt system and replacement by external shunt system associated to systemic antibiotics. In our experience this management must be accepted for treatment of this severe complication.

Martins S.C.S. et al. *Qualidade do leite pasteurizado tipo C comercializado no Município de Fortaleza: bactérias multiresistentes a antibióticos.* Hig. aliment. 1999; 13(59) : 39-42.p Abstract: Avaliam a adequação aos padroes microbiológicos de 20 (vinte) amostras de leite tipo C, constatando que 60 por cento das amostras estavam fora do padrão, além da presença de Salmonella sp, Staphylococcus aureus e Bacillus cereus. Verificaram que 91 por cento das cepas isoladas apresentaram resistência a mais de um antibiótico, dos nove tipos testados.(AU).

Martins S.C.S. et al. *Isolamento e caracterização de bactérias de diferentes ambientes hospitalares: perfil da sensibilidade a quimioterápicos.* Hig. aliment. 1998; 12(56) : 45-8.p Abstract: Espécies de bactérias foram isoladas de dois ambientes hospitalares (Centro Cirúrgico e Centro de Tratamento Intensivo), da Santa Casa de Misericórdia de Fortaleza - Ceará- Brasil. Referidas espécies foram coletadas do ambiente (ar), aparelhos e instrumentos. A partir desse material, quinze culturas foram identificadas por testes bioquímicos e testadas quanto … susceptibilidade a vinte e um quimioterápicos. As cepas bacterianas isoladas e identificadas estavam uniformemente distribuídas nos dois ambientes avaliados. Todos os microrganismos isolados apresentaram múltipla resistˆncia em até oito antibióticos (Klebsiella sp). A resistˆncia foi generalizada no grupo das penicilinas. No grupo dos aminoglicosídeos, cloranfenicol, tetraciclinas e cefalosporinas, evidenciou-se significativa sensibilidade. Todas as espécies bacterianas isoladas foram sensíveis ao lomefloxacin, antibiótico de última geração. (AU).

Martone W.J. *Spread of vancomycin-resistant enterococci: why did it happen in the United States?* Infect Control Hosp Epidemiol. 1998; 19(8) : 539-45.p Abstract: The question of why vancomycin-resistant enterococci (VRE) became epidemic in the United States can be answered on at least three basic levels: (1) molecular and genetic, (2) factors affecting host-microbe interactions, and (3) epidemiological. This article will address the epidemiological issues and seek to defend the assertion that, once VRE had evolved, its spread throughout hospitals in the United States was all but assured. Nosocomial VRE outbreaks were reported first in the mid- and late-1980s. Since that time, scientific reports of VRE have increased over 20-fold. Among hospitals participating in the National Nosocomial Infection Surveillance System from 1989 to 1997, the percentage of enterococci reported as resistant to vancomycin increased from 0.4% to 23.2% in intensive-care settings and from 0.3% to 15.4% in non-intensive-care settings. Factors leading to the spread of VRE in US hospitals include (1) antimicrobial pressure, (2) sub-optimal clinical laboratory recognition and reporting, (3) unrecognized "silent" carriage and prolonged fecal carriage, (4) environmental contamination and survival, (5) intrahospital and interhospital transfer of colonized patients, (6) introduction of unrecognized carriers from community settings such as nursing homes, and (7) inadequate compliance with hand washing and barrier precautions. Guidelines developed by the Centers for Disease Control and Prevention's Hospital Infection Control Practices Advisory Committee address each of these factors. The impact of these guidelines on the spread of VRE within individual institutions has been variable, and the overall impact of the guidelines nationally is unknown.

Marty N. *Epidemiological typing of Stenotrophomonas maltophilia.* J Hosp Infect. 1997; 36(4) : 261-6.p Abstract: Stenotrophomonas maltophilia is increasingly recognized as a cause of hospital-acquired infection and respiratory tract colonization in cystic fibrosis patients. A number of methods have been described for the typing of strains in epidemiological studies. Pulsed-field gel electrophoresis (PFGE) of total chromosomal DNA cleaved by low-frequency restriction site endonucleases (XbaI, SpeI) is highly discriminatory and defines populations at the strain level. Other molecular methods such as ribotyping with restriction endonucleases (BamHI, ClaI, BelI, EcoRI) can be used to subdivide the species but with reduced discrimination compared with PFGE. Polymerase chain reaction (PCR) fingerprinting techniques utilizing random primers or those directed against repeat motifs (ERIC, REP) are rapid and offer high discrimination for the study of outbreaks. A consistent finding from a number of incidents is the high diversity of strain types of S. maltophilia identified and the low incidence of cross-infection between patients.

Marumo K. et al. *[O-serotypes, biotypes and antimicrobial susceptibilities of Serratia marcescens isolates from clinical specimens: 4th report].* Rinsho Byori. 1995; 43(11) : 1140-6.p Abstract: The clinical isolates of Serratia marcescens in The Showa University Fujigaoka Hospital in the period V during the 3 years from 1991 April to 1994 March were epidemiologically investigated by determining O-antigens, biotypes and antimicrobial susceptibilities. The isolates were collected, while the consumption of beta-lactam antibiotics, new quinolones, and aminoglycosides in the hospital had not changed significantly since 1991. The urease positive O3 strains were predominantly isolated in the period II to IV during the 9 years and 3 months from 1982 January to 1991 April and were more resistant to third generation cephalosporins and the other drugs such as new quinolones and aminoglycosides than the other O-serotype strains. However, the urease negative O14 strains, unlike such O3 strains, were predominantly isolated in the period V and were more resistant to the above mentioned drugs than the other O-serotype strains, indicating that they had higher resistance rates for carbenicillin, latamoxef, ceftizoxime, cefoperazone, cefpirome, tobramycin, dibekacin, gentamicin and fosfomycin than the O3 strains in the period IV during the two years and three months from 1989 January to 1991 March. The hospital wards in which the O14 strains were mainly isolated were the departments of urology, general surgery, orthopedic surgery, haematology, and internal secretion and kidney medicines, corresponding to those in which the isolation number of the O3 strains decreased in the period V. These findings suggest that S. marcescens resident in

the hospital inherits multiple drug resistance by changing the biotype and O-serotype.

Marumo K. et al. *[Epidemiological evaluation of Serratia marcescens clinical isolates in a general hospital during the past three years: appearance of O-antigens O2 and O14].* Rinsho Byori. 1998; 46(7) : 728-33.p Abstract: One hundred sixteen isolates of Serratia marcescens collected in Showa University Fujigaoka Hospital between April in 1994 and March in 1997 were investigated by O-serotyping, biotyping and antimicrobial susceptibility testing. The results were as follows. 1. Of the total isolates, 37.1 and 24.1% were O2 and O14, respectively, and these values were higher than that of any other serotype. 2. In the hospital, the O2 strains were often isolates in the wards of neurology, plastic surgery, general surgery and ophthalmology, while the O14 strains were often isolated in the wards of urology and orthopedic surgery. 3. The isolation percentages of the biotypes 5307721 and 70405356 with PII 20E and Microscan systems were 81.1 and 50%, respectively. Both biotypes showed typical S. marcescens. There was no relation between O2 or O14 and biotypes. 4. All of the O2 isolates were susceptible to third generation cephems, cefotaxime, ceftazidime and cefpirome, and at least 88% were susceptible to aminoglycosides, whereas the O14 isolates were much more resistant to these antibiotics than the O2 isolates. 5. The isolation percentages of O2 and O14 from urine were 57.1 and 16.3%, whereas those from sputum and pharynx swab were 7.1 and 53.5%, respectively. 6. The isolation percentage of O14 susceptible to gentamicin was very high (96.5%), compared with that of between April in 1991 and March in 1994 (23.3%). Furthermore, increased isolation percentages of the O14 isolates susceptible to gentamicin, tobramycin and amikacin in this period were linked with the decrease in the annual purchased amount of each aminoglycoside and with the decreased isolation percentage from urine. These findings revealed the environments in which the O2 and O14 isolates in this period were predominant over other O-serotypes, while S. marcescens mediated by patients inhabits in the hospital.

Marushko I.u.V. *[The colonization resistance of the tonsils in healthy and frequently ill children].* Lik Sprava. 1998; (1) : 115-7.p Abstract: State of colonization resistance was studied in healthy children and those presenting with recurring infectious and inflammatory diseases of the upper respiratory tract. Identification of representatives of tonsil anaerobic and aerobic floras was carried out. Lactic acid bacteria (LAB), alpha-Streptococcus, were present in tonsil flora of healthy children. Pathogenic microorganisms and opportunistic pathogens were recoverable from always ailing children with tonsillitis, with alpha-streptococcus being recoverable very seldom and no decrease in LAB levels being seen. In patients—candidates for tonsillectomy, pathogenic microorganisms were identifiable, with LAB levels decrease by a factor of 10(3-4). The above findings suggest development of dysbacteriosis, decrement of tonsil colonization resistance in always ailing children, which fact is to be considered in designing and implementing therapeutic measures.

Maruyama J. et al. *[Clinical studies on acute otitis media in infants less than one year old].* Nippon Jibiinkoka Gakkai Kaiho. 1996; 99(3) : 402-10.p Abstract: Epidemiological and bacteriological studies were made on 164 infants less than 1 year old with acute otitis media (OMA) treated at the Department of Otorhinolaryngology, Matsuyama Red Cross Hospital between January 1991 and December 1993. The patients consisted of 101 males (61.6%) and 63 females (38.4%). Compared with the general population in Matsuyama city, the preponderance of male patients with OMA is statistically significant at the level of $P = 0.05$. In infants less than 1 year old males are likely to be more susceptible to OMA than females. One hundred and four patients among the 164 (63.4%) were referred by pediatricians. Fever was the most common symptom (57.9%) and the next was otorrhea (19.5%). Between the patients younger than 6 months (younger group) and those 6 months old or older (older group) there were epidemiological differences which were statistically significant at the level of $P = 0.05$. The older group contained 128 patients (78.0%) and the younger group 36 (22.0%). The difference in incidence between the two groups indicates that infants 6 months old or older are more susceptible to OMA than those younger than 6 months. In the older group 76.6% of the patients had bilateral OMA, while in 38.9% of those in the younger group the OMA was bilateral. In infants 6 months old or older bilateral involvement and, in contrast, in infants younger than 6 months unilateral involvement was more frequent. The period needed to cure OMA was confirmed for 179 ears of 106 patients. For 80 (44.7%) of the 179 ears the period extended beyond 4 weeks. Seventy-five of the 80 ears were those of patients in the older group. OMA in the older group tended to be more resistant to treatment. The middle ear secretion of 117 ears was examined bacteriologically. Specimens were collected from middle ear effusion of 99 ears following myringotomy and from otorrhea in 18 ears. Cultures of 68 specimens were positive for one species of bacteria and 13 cultures yielded two species. Streptococcus pneumoniae, Staphylococcus epidermidis and Haemophilus influenzae were the three most common microorganisms in middle ear effusion. But it was considered that S. spidermidis was not pathogenic and was a result of contamination. In otorrhea S. aureus was frequently found. No difference in the results of bacteriological study was noted between the two groups. Transplacental IgG1 and IgG2 antibodies to S. pneumoniae and H. influenzae are known to decrease after birth and their serum levels are lowest between ages 6 months and 1 year. Then the serum levels of the immunoglobulins increase gradually with active production until age 4 years. The incidence and period of restitution of OMA in infants less than 1 year old in the present study seem to reflect the above Change in the serum levels of IgG1 and IgG2 mentioned. Based on the above results emphasis is placed on close cooperation between the otolaryngologist and the pediatrician in the treatment of OMA in an infant less than 1 year old. Particularly careful follow-up is important in patients in the older age group because they tend to be more susceptible to OMA and the disease is more resistant to treatment.

Masaki H. et al. *[Coagulase typing of Staphylococcus aureus in the geriatric wards after introduction of preventive measures of hospital infection].* Kansenshogaku Zasshi. 1997; 71(3) : 229-35.p Abstract: In the early 1980's methicillin-resistant Staphylococcus aureus (MRSA) was reported as a major pathogenic organism of geriatric hospital infection in Japan. At the same time in our geriatric wards, including 190 beds, MRSA infection was prevalent. In the early 1980's in our geriatric wards minocycline was one of the most sensitive antibiotics to MRSA isolated in our wards and used frequently against MRSA pneumonias and bacteremia. In the late 1980's resistant strains of MRSA to minocycline rapidly increased because vancomycin was not allowed to introduced for treatment of MRSA before 1991 in Japan. At the same period the predominant coagulase type changed from type II to type VII. To decrease minocycline-resistant strains to MRSA after 1987, use of minocycline was limited. Moreover since Oct. 1991 to decrease nosocomial infections some active preventive measures against hospital infection, including limited use of 2nd and 3rd cephems, were taken. In this study changing patterns of coagulase type of Staphylococcus aureus were discussed. At least 4 years was needed to find out that the predominant coagulase type changed from type VII to type II again in 1991. In this study about 22 antimicrobial agents MICs of 313 strains of Staphylococcus aureus isolated between March 1992 and June 1993 were determined and compared with the data of MICs before introduction of preventive measures. The pattern of susceptibility to MINO was in part improved. Thus the some sensitive strains of S. aureus were observed again in our geriatric wards. Interestingly indeed it took approximately 5 years to find out the emergence of sensitive strains to MINO since limitation of use of MINO in 1987.

Mascellino M.T. et al. *Antimicrobial activity of fluoroquinolones and other antibiotics on 1,116 clinical gram-positive and gram-negative isolates.*

Drugs Exp Clin Res. 1998; 24(3) : 139-51.p Abstract: A total of 1,116 clinically isolated strains belonging to Staphylococcus aureus (200), Staphylococcus epidermidis (200), Streptococcus pneumoniae (20), Escherchia coli (200), Klebsiella spp. (177), Serratia marcescens (22), Pseudomonas aeruginosa (224), Haemophilus influenzae (35) and Salmonella (38) from the Department of Infectious Diseases, La Sapienza University in Rome (Italy) were tested against three fluoroquinolones (ofloxacin, ciprofloxacin and levofloxacin) and 10 other antibiotics (augmentin, ampicillin, cefaclor, cefixime, cefotaxime, cotrimoxazole, gentamicin, minocycline, oxacillin and vancomycin). Fluoroquinolones inhibited essentially about 100% of H. influenzae, Salmonella and S. pneumoniae, more than 75% of Staphylococcus including methicillin-resistant strains, and about 90% of Enterobacteriaceae and 50% of P. aeruginosa. Minimal inhibitory concentration values ranged from < 0.015 to > 32 micrograms/ml for Klebsiella, S. aureus and epidermidis, E. coli and P. aeruginosa; from < 0.015 to 2 micrograms/ml for Salmonella; from 0.03 to 16 micrograms/ml for Serratia; from < 0.015 to 1 microgram/ml for Haemophilus; and from 0.5 to 2 micrograms/ml for S. pneumoniae. Levofloxacin and to a lesser extent ofloxacin and ciprofloxacin, generally exhibited a greater activity than the other agents against both Gram-positive and Gram-negative bacteria. Regarding the distribution of resistant strains in Italy, we found a peculiar pattern of resistance as far as E. coli and P. aeruginosa were concerned. Quality control parameters are also summarized. S. epidermidis resulted as a new emergent pathogen especially in immunocompromised patients and its level of sensitivity has been modified over the last few years. In fact, the percentage of resistant strains to antibiotics or the percentage of methicillin-resistant isolates (in our study 35%), has gradually increased. Levofloxacin and ofloxacin showed good activity against staphylococcal strains compared with the majority of other antibiotics. These results suggest that the newer quinolones are promising antimicrobial agents for various infections.

Mashita K. et al. *[Bacteria isolated from surgical infections and their susceptibilities to antimicrobial agents. Special references to bacteria isolated between April 1997 and March 1998].* Jpn J Antibiot. 2000; 53(8) : 533-65.p Abstract: The annual multicenter studies on isolated bacteria from infections in general surgery and their antimicrobial susceptibility have been conducted in 19 facilities in Japan since July 1982. This paper describes the results obtained during the period from April 1997 to March 1998. The number of cases investigated as objectives was 215 for one year. A total of 420 strains (170 strains from primary infections and 250 strains from postoperative infections) were isolated from 174 cases (80.9% of total cases). In primary infections, the isolation rate of anaerobic bacteria was higher than in postoperative infections, while in postoperative infections, those of aerobic Gram-positive bacteria and Pseudomonas aeruginosa were higher than in primary infections. Among aerobic Gram-positive bacteria, the isolation rate of Enterococcus faecalis was the highest, followed by Staphylococcus aureus, which was frequently isolated from postoperative infections. Among anaerobic Gram-positive bacteria, Peptostreptococcus spp. and Streptococcus spp. were commonly isolated from both types of infections. Among aerobic Gram-negative bacteria, Escherichia coli was most predominantly isolated from primary infections, followed by P. aeruginosa, Klebsiella pneumoniae in this order, and from postoperative infections, P. aeruginosa was most predominantly isolated, followed by E. coli and K. pneumoniae. Among anaerobic Gram-negative bacteria, Bacteroides fragilis group was the majority of isolates from both types of infections. We found neither vancomycin nor arbekacin resistant strains of S. aureus, and found no vancomycin resistant strains of Enterococcus spp. The susceptibility of P. aeruginosa against carbapenems did not decline in the year 1997, while resistance of B. fragilis group against cephems advanced increasingly.

Mason P.R. et al. *Antimicrobial resistance in gonococci isolated from patients and from commercial sex workers in Harare, Zimbabwe.* Int J Antimicrob Agents. 1997; 9(3) : 175-9.p Abstract: The objective is to compare antibiotic resistance amongst gonococci isolated from different patient groups in Harare, Zimbabwe. Antimicrobial susceptibilities of Neisseria. gonorrhoeae were determined by disc sensitivity tests. The MICs for penicillin, kanamycin, ceftriaxone, norfloxacin and ciprofloxacin were determined using E-test strips. There were 147 isolates from symptomatic men, 47 isolates from symptomatic women, 29 isolates from asymptomatic women and 41 isolates from female commercial sex workers. A total of 119 (45%) isolates were PPNG and 23 (16%) non-PPNG isolates had a penicillin MIC > 0.64 mg/l. Over 90% of isolates were resistant to TMP/SMX and 16% were resistant to tetracycline. Resistance was uncommon against kanamycin (6%), erythromycin (2%) or ceftriaxone (< 1%). For kanamycin, the MIC90 was 32 mg/l, for ceftriaxone the MIC90 was < 0.032 mg/l for non-PPNG and < 0.064 mg/l for PPNG. For norfloxacin and ciprofloxacin the MIC90 was < 0.064 mg/l for both PPNG and non-PPNG. Isolates from the commercial sex workers showed a significantly increased prevalence of PPNG, of penicillin-tolerant non-PPNG and of tetracycline resistance. Four of the 41 isolates from sex workers showed multiple resistance (to penicillin, TMP/SMX, tetracycline and kanamycin) compared to 1/223 isolates from other groups (OR = 24.0). Antimicrobial resistance is common amongst gonococci in Harare, especially with isolates from commercial sex workers. In order for STD treatment to be implemented as an effective strategy in HIV control, continued monitoring of resistance patterns is essential.

Mason P.R. et al. *Antimicrobial susceptibilities of Shigella dysenteriae type 1 isolated in Zimbabwe—implications for the management of dysentery.* Cent Afr J Med. 1995; 41(4) : 132-7.p Abstract: Shigella dysenteriae type 1 was cultured from 56/170 (33 pc) rectal swab specimens collected from patients presenting to hospitals in Harare, Zimbabwe with dysentery. All of the isolates were resistant in vitro to trimethoprim-sulfamethoxazole, with MICs > 32 mg/l, and all except one were resistant to ampicillin, most with an MIC > 256 mg/l. One isolate was resistant to nalidixic acid (MIC > 256 mg/l), but all of the others were sensitive, most with an MIC of 2 mg/l or less. Using antibiotic disks, 96 pc isolates were resistant to chloromphenicol and 94 pc to tetracycline. All isolates were sensitive in vitro to gentamicin. On the basis of these findings, we suggest that commonly available antibiotics including ampicillin, cotrimoxazole, chloramphenicol or tetracycline should not be used for the treatment of dysentery. The most appropriate antimicrobial agent at the present time would be nalidixic acid. Resistance to this is, however, likely to emerge and data on susceptibilities to fluoroquinolones as well as to cephalosporins should be obtained so that further recommendations can be given timeously.

Massard G. et al. *Decortication is a valuable option for late empyema after collapse therapy.* Ann Thorac Surg. 1995; 60(4) : 888-95.p Abstract: BACKGROUND. Infection of previous collapse therapy spaces may raise challenging problems. This study evaluated a conservative surgical approach based on decortication. METHODS. Since 1979, 28 patients (mean age, 60 +/- 6 years) have presented at an average of 37 +/- 7 years after artificial pneumothorax for tuberculosis. Diagnosis of empyema was made on follow-up in 12 patients and on symptoms in 16 patients. Mean vital capacity was 66% +/- 16% of normal. Microorganisms were isolated in 13 patients (Aspergillus fumigatus in 5, Mycobacterium tuberculosis in 4, anaerobes in 4). Decortication was made in 24 patients, associated with thoracoplasty in 4, and with partial lung resection in 2 patients. Thoracoplasty alone was performed in 2 patients, and 2 patients underwent an extrapleural pneumonectomy. RESULTS. Both extrapleural pneumonectomies were complicated with empyema requiring thoracoplasty, resulting in one postoperative death. Operative mortality after decortication was nil. Mean intraoperative blood loss during decortication was 1,830 +/- 1,310 mL. All patients were extubated within 24 hours, except 1 patient who was ventilator-dependent preoperatively. Prolonged air leaks were common (mean duration of drainage, 16 +/- 11 days), but ultimately sealed. Existence of symptoms was predictive of prolonged air leaks ($p < 0.01$).

CONCLUSIONS. We conclude that decortication may provide a one-stage cure avoiding the hazards of extrapleural pneumonectomy; the nonfunctioning remaining lung may resolve the space problem.

Mates A. et al. *Antimicrobial resistance trends in Shigella serogroups isolated in Israel, 1990-1995.* Eur J Clin Microbiol Infect Dis. 2000; 19(2) : 108-11.p Abstract: From a total of 31319 Shigella strains isolated in Israel between 1990 and 1996, 17574 were sent to the National Shigella Reference Center for typing. Of these, 15287 were identified as Shigella sonnei, 1833 as Shigella flexneri, 327 as Shigella boydii and 127 as Shigella dysenteriae. In all, 4395 strains were tested for sensitivity to ampicillin, trimethoprim-sulfamethoxazole, tetracycline, chloramphenicol, nalidixic acid and ofloxacin. All strains tested were sensitive to ofloxacin, and only three strains were resistant to nalidixic acid. Only 113 of 3240 (3.5%) Shigella sonnei strains, 172 of 970 (17.7%) Shigella flexneri strains and 45 of 185 (24.3%) Shigella boydii strains tested were sensitive to four other antibiotic agents. The rates of resistance of Shigella sonnei, Shigella flexneri and Shigella boydii to trimethoprimsulfamethoxazole were 94.4%, 51.3% and 61.6%, respectively. Rates of resistance to ampicillin among these species were 73.4%, 63.5% and 21.4%, respectively. The proportion of strains exhibiting multiple drug resistance was higher for Shigella sonnei than for the other serotypes studied. These results emphasize the need to reassess the use of antibiotic agents in the treatment of shigellosis.

Mathew J. et al. *Clinical features, site of involvement, bacteriologic findings, and outcome of infective endocarditis in intravenous drug users.* Arch Intern Med. 1995; 155(15) : 1641-8.p Abstract: BACKGROUND: Intravenous drug use is an increasingly common condition predisposing to infective endocarditis. Data on infective endocarditis in intravenous drug users are limited. OBJECTIVE: To determine the clinical features, bacteriologic findings, site of involvement, complications, and mortality associated with infective endocarditis in intravenous drug users. METHODS: Cohort study of intravenous drug users with native valve infective endocarditis. RESULTS: A total of 125 cases of infective endocarditis occurred in 114 patients (84 cases [67%] in men and 41 cases [32%] in women) with a mean (+/- SD) age of 37 +/- 7 years. The tricuspid valve was involved in 58 cases (46%), the mitral valve in 40 cases (32%), and the aortic valve in 24 cases (19%). The microorganisms identified included Staphylococcus in 82 cases (65.6%) and Streptococcus in 32 cases (25.6%). Twenty-three patients (18%) underwent surgery, and two (9%) of them died. One hundred two patients (82%) were treated medically, and nine (9%) of them died. Fifteen patients (63%) with aortic valve involvement vs 17 patients (17%) without aortic valve involvement underwent surgery or died without surgery (odds ratio, 8.24; 95% confidence interval, 3.1 to 21.8). Among the survivors, at least one major cardiovascular complication occurred in 79 cases (69.3%). CONCLUSIONS: Infective endocarditis in intravenous drug users affects the right and left sides of the heart with approximately equal frequency. At present, more than 90% of cases of infective endocarditis in intravenous drug users in Chicago are caused by staphylococci or streptococci. Involvement of the aortic valve is predictive of increased morbidity and mortality in intravenous drug users with infective endocarditis. With medical treatment, and surgery when medical treatment fails, intravenous drug users with infective endocarditis have an in-hospital survival rate of 91%.

Mathon L. et al. *[Impact of initial antibiotic therapy on the course of resistance to fluoroquinolones and aminoglycosides in Gram-negative bacilli isolated from intensive care patients].* Ann Fr Anesth Reanim. 1999; 18(10) : 1054-60.p Abstract: OBJECTIVE: To evaluate the effect of the initial antibiotic therapy associating a betalactam antibiotic (BLA) with either an aminoglycoside (AG) or a fluoroquinolone (FQ) on the development of resistance of gram-negative bacilli in an intensive care unit. STUDY DESIGN: Prospective bacteriological surveillance study. PATIENTS: The study included 51 patients experiencing a second infection with gram-negative organisms, eight days or more after a first infection. METHOD: The incidences of bacterial infection and the antimicrobial susceptibility have been assessed. RESULTS: The first-choice therapy was based either on BLA + AG (51%), or on BLA + FQ in the others (46%). The causative organisms were Enterobacteriaceae (57%) and Pseudomonas aeruginosa (31%). The second infection occurred 23 +/- 11 days after the first. The main organisms involved were Pseudomonas aeruginosa (51%) and Enterobacteriaceae (41%). In the group treated initially with an AG, only the antibiotic susceptibility for amikacin decreased significantly (72 vs 36%, $p < 0.05$). The latter was the most prescribed antibiotic (56%). In the FQ group, there was a significant decrease of susceptibility for ciprofloxacin, pefloxacin, netilmicin and tobramycin. The decrease was not significant for gentamicin and amikacin. CONCLUSIONS: In intensive care patients, the use of FQ in association with a BLA increases the resistance to AG and FQ. Therefore it seems preferable to administer an AG in association with a BLA. Amikacine should only be prescribed when justified for a given case.

Matsuda K. et al. *Severe complications of ulcerative colitis after high-dose prednisolone and azathioprine treatment.* J Gastroenterol. 1999; 34(3) : 390-4.p Abstract: We report a rare case of ulcerative colitis (UC) associated with methicillin-resistant Staphylococcus aureus (MRSA) and Pseudomonas aeruginosa infections in multiple organs, and with compressive fracture from osteoporosis after the administration of high-dose prednisolone and azathioprine. A 25-year-old man had been treated with high-dose prednisolone for UC. He suddenly experienced severe lumbago, which prevented him from walking. Plain X-ray demonstrated compressive fractures of the thoracic and the lumbar vertebrae, which were thought to be due to osteoporosis as a side effect of the high-dose prednisolone. At this admission, in another hospital, he also had a bloody discharge from the rectum, and azathioprine was started; however, the patient's condition still did not show any improvement. The total doses of azathioprine and prednisolone he had received were 3150 mg and more than 15,000 mg, respectively. Considering the presence of the serious complications, surgical intervention was the treatment selected. Culture study revealed MRSA in the feces and nasal cavity, and P. aeruginosa in the feces and urine. Vancomycin hydrochloride and gentamicin were administered, and were effective, with a subsequent negative culture study. Subtotal colectomy with mucus fistula was performed. After the operation, culture studies remained negative. Major steroid side effects such as bone fracture and osteoporosis should be considered as an indication for surgery in UC patients. MRSA and P. aeruginosa are a menace, especially for UC immunosuppressed patients on steroid or immunosuppressive therapy. When these bacteria are detected, there should be prompt and adequate antimicrobial therapy against the organisms and the immunosuppressive therapy should be immediately discontinued. We conclude that surgical therapy should be considered in the earlier stage for patients with intractable UC, rather than continuing long-term administration of steroid or azathioprine, which may lead to serious complications.

Matsuda Y. et al. *[Anesthetic management of heart transplantation].* Masui. 2000; 49(6) : 620-5.p Abstract: We anesthetized a 47-yr-old man with end-stage hypertrophic cardiomyopathy for heart transplantation. This is the first case of heart transplantation from a patient with brain death, since the organ transplantation law had become valid in Japan. Anesthesia was induced and maintained with fentanyl and diazepam. Aseptic technique was used in inserting and securing all catheters. The patient was assisted by left ventricular assist system, and hemodynamic suppression at anesthetic induction was trivial. Since complete AV block was present at the termination of cardiopulmonary bypass (CPB), VVI pacing and infusion of isoproterenol were started. In addition, nitroglycerin was given for pulmonary vasodilation. The cardiovascular support used for weaning from CPB included dobutamine, isoprote-renol, dopamine and milrinone. Following weaning from CPB sinus rhythm appeared spontaneously and function of the transplanted heart was satisfactory. When the

patient was transported to ICU reduction in doses of catecholamines was possible, and dopamine and milrinone were infused. The patient was extubated 10 hours after admission to ICU.

Matsumoto N. et al. *Diperamycin, a new antimicrobial antibiotic produced by Streptomyces griseoaurantiacus MK393-AF2. I. Taxonomy, fermentation, isolation, physico-chemical properties and biological activities.* J Antibiot (Tokyo). 1998; 51(12) : 1087-92.p Abstract: Antibacterial antibiotics, diperamycin (1) was produced in the culture broth of Streptomyces griseoaurantiacus MK393-AF2. Various spectroscopic analyses of 1 suggested that 1 belonged to a member of cyclic hexadepsipeptide antibiotic. Antibiotic 1 had potent inhibitory activity against various Gram-positive bacteria including Enterococcus seriolicida and methicillin-resistant Staphylococcus aureus.

Matsumoto N. et al. *Lactonamycin, a new antimicrobial antibiotic produced by Streptomyces rishiriensis MJ773-88K4. I. Taxonomy, fermentation, isolation, physico-chemical properties and biological activities.* J Antibiot (Tokyo). 1999; 52(3) : 269-75.p Abstract: Lactonamycin (1) was isolated from a culture broth of Streptomyces rishiriensis MJ773-88K4. Antibiotic 1 exhibited antimicrobial activities against Gram-positive bacteria including methicillin-resistant Staphylococcus aureus (MRSA) and vancomycin-resistant Enterococcus (VRE).

Matsumoto Y. et al. *[Antimicrobial activities of cefetamet against clinically isolated strains from community acquired respiratory tract infections. Part III].* Jpn J Antibiot. 1999; 52(6) : 469-77.p Abstract: Antimicrobial activities of cefetamet (CEMT) against clinically isolated strains from patients with community acquired respiratory tract infections were investigated in comparison with those of other oral beta-lactam antibiotics during the period from January to March, 1998. The results are summarized as follows; 1. CEMT showed strong antimicrobial activities against three major pathogens causing community acquired respiratory tract infections, Streptococcus pyogenes, Streptococcus pneumoniae and Haemophilus influenzae. However, antimicrobial activities of CEMT against penicillins (PCs)-intermediate S. pneumoniae (PISP) and PCs-resistant S. pneumoniae (PRSP) were slightly weaker than those of some of the reference antibiotics. 2. No chronological changes of CEMT-MIC level were observed in the antimicrobial activities against S. pyogenes, H. influenzae, Moraxella subgenus Branhamella catarrhalis or Klebsiella pneumoniae subsp. pneumoniae. In contrast to this, due to the increase of PISP and PRSP strains, resistance to CEMT appears increasing with time.

Matsumoto Y. et al. *[Antimicrobial activity of ofloxacin against recent clinical isolates from otitis media and otitis externa].* Jpn J Antibiot. 1998; 51(9) : 561-75.p Abstract: In order to evaluate the annual changes of susceptibility, minimum inhibitory concentrations (MICs) of ofloxacin (OFLX) and 4 control drugs were determined against clinical isolates that were obtained from patients with otitis media and otitis externa during the periods between January and December 1993, and the periods between October 1996 and March 1997. The results are summarized as follows: 1. No annual changes were seen for MIC50 of OFLX, but MIC80 and MIC90 of that rose against methicillin-resistant Staphylococcus aureus (MRSA), coagulase-negative staphylococci (CNS) and Pseudomonas aeruginosa from 1993 to 1996. It appears that resistance to OFLX is increasing among these bacteria. Detection frequency of highly resistant strains to OFLX (MIC > 100 micrograms/ml) was lower than to other control drugs. 2. No annual changes were seen of MIC50, MIC80 and MIC90 of OFLX against methicillin-susceptible S. aureus (MSSA), Streptococcus spp., Proteus spp. and Haemophilus influenzae. OFLX showed strong antimicrobial activities against these bacteria. 3. Since there was no large annual changes in the antimicrobial activity of OFLX against clinical isolates that were obtained from patients with otitis media and otitis externa, OFLX otic solution was considered as one of the clinically useful drugs even now.

Matsumura S.O. et al. *Synergy testing of vancomycin-resistant Enterococcus faecium against quinupristin-dalfopristin in combination with other antimicrobial agents.* Antimicrob Agents Chemother. 1999; 43(11) : 2776-9.p Abstract: Using checkerboard and time-kill assays, we evaluated the in vitro activity of quinupristin-dalfopristin (RP 59500) alone and in combination with five other antimicrobial agents against 12 clinical strains of vancomycin-resistant Enterococcus faecium (VREF). In time-kill studies, six VREF strains exhibited synergism with the combination of quinupristin-dalfopristin and doxycycline and three exhibited synergism with quinupristin-dalfopristin plus ampicillin-sulbactam. Combinations of quinupristin-dalfopristin with these and other agents warrant further clinical evaluation for the treatment of serious VREF infections.

Matutte B. et al. *Induction of synthesis of an antimicrobial peptide in the skin of the freeze-tolerant frog, rana sylvatica, in response to environmental stimuli.* FEBS Lett. 2000; 483(2-3) : 135-8.p Abstract: An extract of skin taken from specimens of the freeze-tolerant wood frog, Rana sylvatica, that were collected from cold (<7 degrees C) ponds and maintained at 5 degrees C lacked detectable antimicrobial activity. In contrast, an extract of skin taken from specimens maintained at 30 degrees C for 3 weeks under laboratory conditions contained a high concentration (approximately 4 nmol/g) of a single antimicrobial peptide of the brevinin-1 family (FLPVVAGLAAKVLPSIICAVTKKC). The peptide inhibited growth of Escherichia coli (minimum inhibitory concentration 45 &mgr;M) and Staphylococcus aureus (minimum inhibitory concentration 7 &mgr;M). The data suggest that synthesis of the peptide is induced when the animal is in an environment that promotes the growth of microorganisms consistent with a role in the animal's defense strategy.

Matzanke B.F. et al. *Iron uptake and intracellular metal transfer in mycobacteria mediated by xenosiderophores.* Biometals. 1997; 10(3) : 193-203.p Abstract: Growth promotion was tested using M. smegmatis wild type strain, an exochelin-deficient mutant, and M. fortuitum employing a broad variety of xenosiderophores including hydroxamates, catecholates and alpha-hydroxy carboxylic acids. The experiments revealed that utilization of siderophore-bound iron is substrate specific suggesting high-affinity siderophore receptor and transport systems. Concentration-dependent uptake of a selected xenosiderophore (fericrocin) in M. smegmatis showed saturation kinetics and uptake was inhibited by respiratory poisons. In situ Mossbauer spectroscopy of ferricrocin uptake in M. smegmatis indicated rapid intracellular reductive removal of the metal excluding intracellular ferricrocin accumulation. The ultimate intracellular iron pool is represented by a compound (delta = 0.43 mm s-1, delta EQ = 1.03 mm s-1) which has also been found in many other microorganisms and does not represent a bacterioferritin, cytochrome or iron-sulfur cluster. By contrast, iron uptake via citrate-a compound exhibiting a very low complex stability constant-involves ligand exchange with mycobactin. Mycobactin has merely a transient role. The ultimate storage compound is an E. coli-type bacterioferritin, in which over 90% of cellular iron is located.

Maudsley F. et al. *Microbiological safety of essential oils used in complementary therapies and the activity of these compounds against bacterial and fungal pathogens.* Support Care Cancer. 1999; 7(2) : 100-2.p Abstract: To determine the safety of plant essential oils we determined the sterility of eight of these products obtained from retail outlets. In addition, the ability of oils to support the growth of fungal and bacterial pathogens was examined. The antimicrobial activity of these products against seven bacterial species and Candida albicans was also investigated. All oils and their respective carriers were sterile. Methicillin-resistant Staphylococcus aureus and Pseudomonas aeruginosa were unable to survive in oils for longer than 6 h, whereas C. albicans was able to survive, but not multiply, in ylang ylang oil for at least 48 h.

May J. et al. *Time-kill studies of tea tree oils on clinical isolates.* J Antimicrob Chemother. 2000; 45(5) : 639-43.p Abstract: Tea tree oil has recently emerged as an effective topical antimicrobial agent active against a wide range of organisms. Tea tree oil may have a clinical application in both the hospital and community, especially for clearance of methicillin-resistant Staphylococcus aureus (MRSA) carriage or as a hand disinfectant to prevent cross-infection with Gram-positive and Gramnegative epidemic organisms. Our study, based on the time-kill approach, determined the kill rate of tea tree oil against several multidrug-resistant organisms, including MRSA, glycopeptide-resistant enterococci, aminoglycoside-resistant klebsiellae, Pseudomonas aeruginosa and Stenotrophomonas maltophilia, and also against sensitive microorganisms. The study was performed with two chemically different tea tree oils. One was a standard oil and the other was Clone 88 extracted from a specially bred tree, which has been selected and bred for increased activity and decreased skin irritation. Our results confirm that the cloned oil had increased antimicrobial activity when compared with the standard oil. Most results indicated that the susceptibility pattern and Gram reaction of the organism did not influence the kill rate. A rapid killing time (less than 60 min) was achieved with both tea tree oils with most isolates, but MRSA was killed more slowly than other organisms.

Mazel J.W. et al. *[Catheter fracture and embolization: a rare complication of a permanent implanted intravenous catheter system].* Ned Tijdschr Geneeskd. 2000; 144(28) : 1360-3.p Abstract: An implantable venous access system was used in a 55-year-old woman with metastatic breast cancer for the delivery of chemotherapy. Four months after implantation the catheter was resistant to the injection of fluids. A chest X-ray showed fracture of the catheter with embolisation to the right pulmonary artery. Analysis of the fractured catheter after removal showed that the fracture was caused by catheter pinch-off. Catheter pinch-off is caused by friction of the catheter between the clavicle and the first rib. The incidence of this rare complication is estimated at 0.1-1%. The incidence of catheter pinch-off can be reduced by a lateral insertion technique and by radiographic monitoring after implantation.

Mazengo M.C. et al. *Dental caries in relation to diet, saliva and cariogenic microorganisms in Tanzanians of selected age groups.* Community Dent Oral Epidemiol. 1996; 24(3) : 169-74.p Abstract: The relationship between diet and dental caries in a Tanzanian population was studied. Mutans streptococci, lactobacilli, yeasts, salivary flow rate as well as buffer effect were also analyzed. A random sample of 12-, 35-44- and 65- to 74- year olds was drawn from Msongola (rural) and Ukombozi (urban), Dar-es-Salaam. The mean of two 24-h recalls was used for the assessment of food intake. The percentage of those with at least one carious tooth ranged from 30% in the 12-year-olds to 80% in the oldest age group. The mean number of decayed teeth (DT) increased significantly with age (P = 0.000) but was not significantly associated with the area of residence. DT increased significantly (P = 0.048) with the number of snacks per day and was also associated with dietary sucrose (P = 0.025), total carbohydrates (P = 0.002) and fiber (P = 0.002). Among salivary variables lactobacilli (P = 0.000) correlated positively with DT. Our study did not reveal any strong association between total energy intake and dental caries in rural or urban populations in Tanzania but snacking and sucrose intake were significantly associated with caries, in particular in the urban area.

Mazzanti G. et al. *Antimicrobial investigation of semipurified fractions of Ginkgo biloba leaves.* J Ethnopharmacol. 2000; 71(1-2) : 83-8.p Abstract: A total methanolic extract of Ginkgo biloba leaves was fractionated by solvent partition using ethyl acetate (fraction A), n-butanol (fraction B) and water (fraction C). The antimicrobial activity of the three fractions was evaluated using a number of Gram-positive and -negative bacteria and yeasts. The apolar fraction A appeared to be the most interesting because of its activity against several microorganisms; this fraction was further separated by high performance liquid chromatography, and shown to contain substances with strong inhibitory activity against Enterococcus faecalis 31, different from the major known chemical components of G. biloba leaves.

McCaig L.F. et al. *Trends in antimicrobial drug prescribing among office-based physicians in the United States.* JAMA. 1995; 273(3) : 214-9.p Abstract: OBJECTIVE—To assess changes in oral antimicrobial drug prescribing by office-based physicians from 1980 through 1992, with emphasis on the treatment of otitis media and sinusitis and on the possible impact of demographic variables on such use. DESIGN—The National Ambulatory Medical Care Survey is a sample survey of office-based physicians in the United States conducted by the National Center for Health Statistics, Centers for Disease Control and Prevention. SETTING—Physicians' offices. PATIENTS OR OTHER PARTICIPANTS—Physicians sampled for the 1980, 1985, 1989, and 1992 National Ambulatory Medical Care Surveys, which included groups of 2959, 5032, 2540, and 3000 physicians, respectively. Sample physicians responding in 1980, 1985, 1989, and 1992 reported data for 46,081, 71,594, 38,384, and 34,606 sample office visits, respectively, including information on antimicrobial drug prescribing. MAIN OUTCOME MEASURE—Trends in the antimicrobial drug prescription rates. RESULTS—From 1980 through 1992, increasing prescribing measured by the annual drug prescription rate per 1000 population, was found for the more expensive, broad-spectrum antimicrobial drugs, such as the cephalosporins; decreasing rates were observed for less expensive antimicrobial drugs with a narrower spectrum, such as the penicillins. No trend was found for trimethoprim-sulfamethoxazole, the erythromycins, or the tetracyclines. During the decade, an increasing trend in the visit rate to office-based physicians for otitis media was observed, while the visit rate for sinusitis among adults was found to be higher in 1992 than in each of the other study years. CONCLUSIONS—The increased use of broader-spectrum and more expensive antimicrobial drugs have implications for all patients because of the impact on health care costs and the potential for the emergence of antimicrobial resistance. The data suggest that the incidence of otitis media and sinusitis is increasing.

McCormick J.B. *Epidemiology of emerging/re-emerging antimicrobial-resistant bacterial pathogens.* Curr Opin Microbiol. 1998; 1(1) : 125-9.p Abstract: The rapid global expansion of bacteria resistant to antimicrobials is the most important development over the past year in emerging bacterial diseases. The critical events are the emergence of Staphylococcus aureus with decreased sensitivity to vancomycin, worldwide resistance to penicillin in Streptococcus pneumoniae, and the remorseless progression of multiply-resistant Mycobacterium tuberculosis. Most startling was the isolation from a human in Madagascar of a plague bacillus possessing a plasmid readily transferable to Escherichia coli, which confers multiple antibiotic resistance. The hospital environment continues to see the transmission of resistant organisms, notably vancomycin-resistant enterococci. Finally, as food markets become more open around the world, food-borne outbreaks of E. coli 0157 and cholera demonstrate how difficult it can be to establish effective health and safety barriers.

McCracken G.H. Jr. *Etiology and treatment of pneumonia.* Pediatr Infect Dis J. 2000; 19(4) : 373-7.p Abstract: BACKGROUND: Lower respiratory tract infections are a common cause of morbidity among children. Among these infections pneumonia is the most serious illness and can be difficult to diagnose. The etiology of pneumonia is still partly unknown, primarily because of difficulty in obtaining adequate samples and lack of reliable diagnostic methods. ETIOLOGY OF PNEUMONIA: Streptococcus pneumoniae is recognized as an important cause of pediatric pneumonia regardless of age in both the inpatient and outpatient setting. In developed countries S. pneumoniae probably accounts for 25 to 30% of cases of pediatric community-acquired pneumonia. Viruses (mostly respiratory syncytial virus) are responsible for approximately 20% of cases, and

Chlamydia pneumoniae and Mycoplasma pneumoniae occur commonly in older children. FUTURE CHALLENGES: Despite the effectiveness of antimicrobial therapy, the emergence of resistant bacterial pathogens has resulted in increased interest in developing more effective vaccines. If conjugate pneumococcal vaccines prove effective at eradicating carriage of pneumococci in the nasopharynx, immunization may be an important tool against the spread of pneumococcal disease. Future challenges include implementation of effective intervention strategies, production of simple diagnostic tools and development of effective vaccines.

McCracken G.H. Jr. *Microbiologic activity of the newer macrolide antibiotics.* Pediatr Infect Dis J. 1997; 16(4) : 432-7.p Abstract: In vitro susceptibility testing has demonstrated good activity of the azalide azithromycin and the macrolide clarithromycin against Gram-positive and -negative pathogens as well as atypical organisms involved in the etiology of upper and lower respiratory tract infections. One difference between these drugs in terms of their antimicrobial spectrum is the activity of azithromycin against Haemophilus influenzae. This organism is 2 to 8 times more susceptible in vitro to azithromycin than to clarithromycin or to erythromycin, the prototypical macrolide antibiotic. A principal concern in the management of respiratory tract infections today is the emergence of penicillin-resistant strains of Streptococcus pneumoniae. Both azithromycin and clarithromycin are active against penicillin-susceptible S. pneumoniae, although the activity of azithromycin is somewhat less than that of erythromycin and clarithromycin. Results of susceptibility testing of resistant organisms have varied among centers; in some areas all of the intermediately and some of the highly penicillin-resistant S. pneumoniae isolates are susceptible to the newer macrolides, whereas in other areas they are not. High tissue antibiotic concentrations achieved with these drugs may contribute to their effectiveness against some of the resistant S. pneumoniae isolates.

McCulloch J. *Hospital-acquired infection.* Nurs Stand. 1998; 13(3) : 33-4.p Abstract : This report focuses on nosocomial or hospital-acquired infections (HAIs), discussed extensively at this year's annual conference of the Infection Control Nurses' Association (ICNA) in September.

McDermott P.F. et al. *Multidrug resistance following expression of the Escherichia coli marA gene in Mycobacterium smegmatis.* J Bacteriol. 1998; 180(11) : 2995-8.p Abstract: Expression of the Escherichia coli multiple antibiotic resistance marA gene cloned in Mycobacterium smegmatis produced increased resistance to multiple antimicrobial agents, including rifampin, isoniazid, ethambutol, tetracycline, and chloramphenicol. Cloned marR or marA cloned in the antisense direction had no effect. Resistance changes were lost with spontaneous loss of the plasmid bearing marA. A MarA mutant protein, having an insertional mutation within either of its two alpha-helices of the first putative helix-turn-helix domain, failed to produce the multiresistance phenotype in E. coli and M. smegmatis, indicating that this region is critical for MarA function. These results strongly suggest that E. coli marA functions in M. smegmatis and that a mar-like regulatory system exists in this organism.

McDonald L.C. et al. *Vancomycin-resistant enterococci outside the health-care setting: prevalence, sources, and public health implications.* Emerg Infect Dis. 1997; 3(3) : 311-7.p Abstract: Although nosocomial acquisition and subsequent colonization of vancomycin-resistant enterococci (VRE), an emerging international threat to public health, has been emphasized in the United States, colonization among nonhospitalized persons has been infrequently documented. In contrast, in Europe, colonization appears to occur frequently in persons outside the health-care setting. An important factor associated with VRE in the community in Europe has been avoparcin, a glycopeptide antimicrobial drug used for years in many European nations at subtherapeutic doses as a growth promoter in food-producing animals. In Europe, evidence suggests that foodborne VRE may cause human colonization. Although avoparcin has never been approved for use in the United States, undetected community VRE transmission may be occurring at low levels. Further studies of community transmission of VRE in the United States are urgently needed. If transmission with VRE from unrecognized community sources can be identified and controlled, increased incidence of colonization and infection among hospitalized patients may be prevented.

McEachern R. et al. *Hospital-acquired pneumonia: epidemiology, etiology, and treatment.* Infect Dis Clin North Am. 1998; 12(3) : 761-79, x.p Abstract: Despite improvements in diagnosis, treatment, and prevention, hospital-acquired pneumonia (HAP) remains the number one cause of nosocomial mortality. This article reviews the current knowledge regarding the incidence, epidemiology, and causes of HAP, with the appreciation that the available information is incomplete and that controversies are common, and thus the authors provide a rational approach to the initial management of HAP in immunocompetent adults. A discussion of therapy and what to do with patients who do not respond to the empiric therapy are included. The American Thoracic Society (ATS) statement on HAP has served as a foundation for this review but has been supplemented by newer literature that was not available when the ATS statement was developed.

McGowan J.E. Jr. *Strategies for study of the role of cycling on antimicrobial use and resistance.* Infect Control Hosp Epidemiol. 2000; 21(1 Suppl) : S36-43.p Abstract: Resistant bacteria usually are seen first in the intensive care unit and other acute-care areas. Thus, strategies to control these organisms often are first tested in these healthcare settings. Frequent among these strategies are attempts to improve antimicrobial use. One proposed method to decrease resistance in special settings like the intensive care unit is the cycling or rotation of antimicrobials. This intervention must be evaluated in the context of other concomitant attempts to improve antimicrobial usage and must take into account other factors influencing resistance. Until such studies are done, the value of cycling and other efforts to limit prescribers' choices of drugs in endemic settings will be unclear. Studies to evaluate cycling will have to be of large scale to produce useful data. It is unlikely that many hospitals or healthcare systems will have sufficient resources on their own to develop studies of sufficient power to be applied widely. Thus, cooperative studies to provide data on this important issue should be an international priority.

McGowan J.E. Jr et al. *Penicillin-resistant pneumococci—an emerging threat to successful therapy.* J Hosp Infect. 1995; 30 Suppl : 472-82.p Abstract: Pneumococci highly resistant to penicillin G [minimum inhibitory concentration (MIC) > or = 2 mg L-1] have become prevalent in many parts of the world since their emergence and spread in the late 1970s. In the USA, such organisms are seen primarily in two populations: infants and children, and adults with AIDS. Surveys in both rural and urban areas have revealed presence of these organisms, as well as an increasing frequency of Streptococcus pneumoniae strains relatively resistant to penicillin (MIC 0.1-1.0 mg L-1—now defined by some as 'intermediate' resistance). Predisposing factors are not yet clear. Prior antimicrobial therapy was given to some of the children and most of the adults who are colonized or infected with resistant strains. Prior or concurrent use of cotrimoxazole prophylaxis for Pneumocystis carinii pneumonia has been frequent in our cases in adults, most of whom had a concurrent diagnosis of AIDS. Children with disease often have a history of long-term prophylaxis with a beta-lactam drug (for sickle cell disease, etc). Many strains are also resistant to newer cephalosporins like cefotaxime and ceftriaxone (MIC > or = 2 mg L-1). The organisms are frequently multi-resistant, with high MIC values common as well for chloramphenicol and variable for tetracycline, macrolides, cotrimoxazole, and fluoroquinolones. Only to vancomycin are the organisms consistently susceptible. These findings raise alarms about the future of pneumococcal disease in both community and nosocomial disease. Increasing prevalence in otitis

and pneumonia in children and in community-acquired pneumonia in adults may lead to use of vancomycin as empirical therapy for these clinical situations. This would increase the selective pressure for emergence of vancomycin-resistant organisms, whether S. pneumoniae or others. Moreover, the pneumococcus was a common cause of hospital infection prior to the introduction of penicillin. The potential now exists for nosocomial pneumococcal infection again to become a feared and ominous occurrence.

McGregor K. et al. *Moraxella catarrhalis: clinical significance, antimicrobial susceptibility and BRO beta-lactamases.* Eur J Clin Microbiol Infect Dis. 1998; 17(4) : 219-34.p Abstract: Moraxella catarrhalis is an important pathogen of humans. It is a common cause of respiratory infections, particularly otitis media in children and lower respiratory tract infections in the elderly. Colonisation of the upper respiratory tract appears to be associated with infection in many cases, although this association is not well understood. Nosocomial transmission is being increasingly documented and the emergence of this organism as a cause of bacteremia is of concern. The widespread production of a beta-lactamase enzyme renders Moraxella catarrhalis resistant to the penicillins. Cephalosporins and beta-lactamase inhibitor combinations are effective for treatment of beta-lactamase producers, and the organism remains nearly universally susceptible to the macrolides, fluoroquinolones, tetracyclines and the combination of trimethoprim and sulfamethoxazole. Two major beta-lactamase forms, BRO-1 and BRO-2, have been described on the basis of their isoelectric focusing patterns. The BRO-1 enzyme is found in the majority of beta-lactamase-producing isolates and confers a higher level of resistance to strains than BRO-2. The BRO enzymes are membrane associated and their production appears to be mediated by chromosomal determinants which are transmissible by an unknown mechanism. The origin of these novel proteins is unknown.

McIntyre P. et al. *Surveillance of pneumococcal disease in Australian states and territories.* Commun Dis Intell. 2000; 24(4) : 93-5.p Abstract: Information on pneumococcal disease, including immunisation programs, and optimum future surveillance in each Australian State and Territory were discussed at the Pneumococcal Disease in Australia Workshop on 26-27 March 1999. Workshop participants further expanded on the surveillance aspects of the Workshop in this report. Most participants favoured notification by laboratories of pneumococcal isolates from sterile sites, to provide baseline surveillance data before immunisation programs are fully implemented. It was also thought that trends in antimicrobial resistance should be notified.

McLaws M.L. et al. *Standardising surveillance of nosocomial infections: the HISS program. Hospital Infection Standardised Surveillance.* J Qual Clin Pract. 2000; 20(1) : 6-11.p Abstract: Standardised surveillance of nosocomial infections in Australia had not been addressed until June 1998 when the New South Wales Health Department funded the development and implementation of the first standardised surveillance system for hospital infection: the Hospital Infection Standardised Surveillance program (HISS). The introduction of a standardised surveillance system needs to balance the requirements of a Health Department and the needs of hospitals. The Health Department requires data to develop aggregated rates for the setting of thresholds for all nosocomial infections while hospitals require rates to reflect the quality of clinical care and provide data for evidence-based infection control practices. The Hospital Infection Epidemiology and Surveillance (HIES) Unit has attempted to balance these requirements using a 'sentinel surveillance' approach with standardised definitions and methodology. The HISS program utilizes eICAT software modified for its standardised requirements of data collection. To date, 10 hospitals surveyed sentinel multiple resistant organisms (MRO), eight also elected sentinel surgical procedures (SSP) and intravascular device-related bacteraemia (IVDRB) modules, and two the seasonal respiratory syncytial (RSV) and rota-virus modules in paediatric patients. The surgical site infection rates in three commonly monitored SSP were 1.8% (95% confidence interval (CI) 0.7-3.9%) for coronary artery bypass (CABG), 3.3% (95% CI 1.4-6.8%) lower segment Caesarean section (LSCS) and 7.7% (95% CI 3.4-14.6%) colorectal surgery. The rate of IVDRB was 4.7 per 1000 central venous catheter days (95% CI 2.2-8.6) and 1.1 per 1000 peripheral line-days (95% CI 0.1-3.9). Methicillin resistant Staphylococcus aureus (MRSA) accounted for 99% of all new infections diagnosed with an endemic MRO.

McMahon C. et al. *Central venous access devices in children with congenital coagulation disorders: complications and long-term outcome.* Br J Haematol. 2000; 110(2) : 461-8.p Abstract: Reliable venous access is essential to facilitate the administration of prophylactic factor concentrate or blood products in children with congenital coagulation disorders and immune tolerance therapy (ITT) regimens in those who develop high responding inhibitors. Poor venous access is even more problematic in very young children, the vast majority of whom will require the insertion of central venous access devices (CVADs). Previous studies have suggested that infection rates are low and that there are few long-term complications associated with CVAD usage. We have reviewed 86 CVADs that have been inserted, since 1988, in 58 children with congenital bleeding disorders, aged 6 d to 16.5 years, attending Great Ormond Street Hospital, London, and the National Children's Hospital, Dublin. The devices have remained in situ for 2 weeks to 92 months (median 22.5 months). Early (0-2 weeks) complications of CVAD insertion included nine bleeding episodes, one extravasation of factor concentrate, three allergic reactions to factor concentrate and five catheter infections. Overall, CVAD infection was the commonest problem encountered, with 52 devices (60%) becoming infected. Twenty-seven CVADs (31%) required removal. Infection rates in children without inhibitors (29/68) were 1/20 patient-months or 1. 6 infections/1000 patient-days, but infection rates for those with inhibitors were 1/8.5 patient-months or 4.3/1000 patient-days. Staphylococcus epidermidis was the predominant organism (25/52) isolated. Blockage of CVAD (four) and catheter disconnection (four) were the most frequently occurring non-infectious long-term complications. Skin erosion of the port was also seen in three children, in one child at 20 months, in one at 29 months and in one at 34 months after insertion. This study demonstrates a high CVAD infection rate and highlights the long-term complications of CVAD usage.

McManus M.C. *Mechanisms of bacterial resistance to antimicrobial agents.* Am J Health Syst Pharm. 1997; 54(12) : 1420-33; quiz 1444-6.p Abstract: The mechanisms behind the development and spread of bacterial resistance to antimicrobial drugs are reviewed. The chief mechanisms by which antimicrobials act are interference with nucleic acid synthesis, binding to ribosomes, and inhibition of cell-wall synthesis and folate metabolism. Bacteria have evolved genetic and biochemical ways of resisting these antimicrobial actions. Genetic mechanisms include mutation and acquisition of new DNA. Bacteria resist antimicrobials biochemically by inactivating the drugs with beta-lactamases, acetylases, adenylases, and phosphorylases; reducing drug access sites of action by virtue of membrane characteristics; altering the drug target so that the antimicrobial no longer binds to it; bypassing the drug's metabolism; and developing tolerance. Enterococcal and staphylococcal resistance mechanisms are of particular importance clinically. There are three types of enterococcal resistance: (1) intrinsic resistance to aminoglycosides, aztreonam, cephalosporins, clindamycin, imipenem, penicillin, and trimethoprim-sulfamethoxazole, (2) tolerance to all cell-wall-active antimicrobials, and (3) acquired resistance to penicillin, aminoglycosides, chloramphenicol, erythromycin, tetracycline, and vancomycin. Staphylococcal resistance to penicillins is expressed as beta-lactamase production, secretion of novel beta-lactamases, expression of novel penicillin-binding proteins (PBPs) to which penicillins bind poorly, and increased production of or altered affinity to existing PBPs. Of great concern is whether newly described glycopeptide resistance can be transferred clinically from enterococci to staphylococci. Vancomycin use is discouraged to limit the spread of glycopeptide

resistance. Many mechanisms are responsible for the development and spread of antimicrobial resistance.

McNamara E.B. et al. *A survey of antimicrobial susceptibility of clinical isolates of Enterococcus spp. from Irish hospitals.* J Antimicrob Chemother. 1995; 35(1) : 185-9.p Abstract: Nosocomial enterococcal infections are increasing. In order to establish the species distribution and antibiotic resistance patterns of enterococci in clinical specimens from hospitalized patients, we undertook a survey of 23 Irish hospitals. One thousand and five viable enterococcal strains were studied. Nine different species of enterococci were identified, including Enterococcus faecalis (84%); Enterococcus faecium (9%); and Enterococcus hirae (3%). The most common sites of isolation were the urinary tract (66%), wound and soft tissues (23%) and blood stream (3%). Many of the isolates were multiply antibiotic resistant. Ampicillin resistance was detected in 16%. Neither beta-lactamase production, nor high level penicillin resistance was detected. High level gentamicin resistance was evident in 7% of isolates and varied among species, e.g. 4% E. faecalis, 24% E. faecium, and 34% E. hirae. A number of isolates (23%) were also highly resistant to streptomycin. No clinically significant glycopeptide resistance was detected. The species distribution and incidence of multiple resistance was geographically widespread. This emphasizes the need for detailed speciation and in-vitro susceptibility testing along with the evaluation of alternative combination chemotherapeutic regimens for the management of serious enterococcal infection.

McNeeley D.F. et al. *Neonatal enterococcal bacteremia: an increasingly frequent event with potentially untreatable pathogens.* Pediatr Infect Dis J. 1996; 15(9) : 800-5.p Abstract: BACKGROUND: Enterococci can cause serious infections in the newborn. The increased number of these infections since the late 1970s and the increased isolation of organisms resistant to many commonly used antimicrobials prompted review of our experience with enterococcal bacteremia in the neonatal intensive care unit. This review was aimed at defining the character of illness of newborns who had these infections during a 20-year period. METHODS: This was a retrospective review of the medical records of newborns with enterococci isolated from blood. RESULTS: Between January, 1974, and December, 1993, 138 episodes of enterococcal bacteremia occurred in newborns hospitalized in the neonatal intensive care unit. Thirty-four episodes occurred during the first decade and 104 episodes during the second decade. One hundred of the 138 episodes were reviewed. In 64% of these episodes other microorganisms were also isolated from blood. Comparison of clinical characteristics associated with these episodes in the first and second decade demonstrated that episodes occurring in the more recent decade occurred in older infants (mean age of onset, 44.7 vs. 16.1 days; episodes occurring after 14 days, 73% vs. 41%). Common characteristics associated with enterococcal bacteremia included the presence of a central vascular catheter (77%), necrotizing enterocolitis (33%) and abdominal distension (21%). Vancomycin-resistant enterococci caused bacteremia in 6 infants and caused illnesses indistinguishable from those caused by susceptible organisms. CONCLUSIONS: In the more recent decade there were three times the number of episodes of enterococcal bacteremia in our neonatal intensive care unit than there were in the previous decade. The characteristics associated with these infections were similar to those occurring with other nosocomial bacterial infections in the neonate and did not change during the period reviewed. Most recent episodes occurred as part of polymicrobial infections in newborns hospitalized for more than 1 month. Infections caused by vancomycin-resistant enterococci occurred in older patients but were clinically indistinguishable from infections caused by sensitive organisms.

Meens J. et al. *Use of the pre-pro part of Staphylococcus hyicus lipase as a carrier for secretion of Escherichia coli outer membrane protein A (OmpA) prevents proteolytic degradation of OmpA by cell-associated protease(s) in two different gram-positive bacteria*. Appl Environ Microbiol. 1997; 63(7) : 2814-20.p Abstract: Heterologous protein secretion was studied in the gram-positive bacteria Bacillus subtilis and Staphylococcus carnosus by using the Escherichia coli outer membrane protein OmpA as a model protein. The OmpA protein was found to be translocated across the plasma membrane of both microorganisms. However, the majority of the translocated OmpA was similarly degraded in B. subtilis and S. carnosus despite the fact that the latter organism does not secrete soluble exoproteases into the culture medium. The finding that purified OmpA, which was added externally to the culture medium of growing S. carnosus cells, remained intact indicates that newly synthesized and exported OmpA is degraded by one or more cell-associated proteases rather than by a soluble exoprotease. Fusion of the mature part of OmpA to the pre-pro part of a lipase from Staphylococcus hyicus allowed the efficient release of the corresponding propeptide-OmpA hybrid protein into the supernatant and completely prevented the cell-associated proteolytic degradation of the mature OmpA, most likely reflecting an important function of the propeptide during secretion of its natural mature lipase moiety. The relevance of our findings for the biotechnological use of gram-positive bacteria as host organisms for the secretory production of heterologous proteins is discussed.

Meessen S. et al. *A new suprapubic cystostomy trocar system*. Urology. 2000; 56(2) : 315-6.p Abstract: We describe a newly developed suprapubic catheterization set with a defined sigmoidal, geometrically and functionally tripartite tip and grooved trocar shaft. The device was designed to enhance the handling and safety features of the current commercially available sets to promote the broader application of suprapubic catheterization.

Megraud F. *Rationale for the choice of antibiotics for the eradication of Helicobacter pylori*. Eur J Gastroenterol Hepatol. 1995; 7 Suppl 1 : S49-54.p Abstract: AIM: To review data on the efficacy of antibiotics currently available for the eradication of Helicobacter pylori. RESULTS: The main problem with current therapy is the resistance of H. pylori to the compounds used, with the exception of amoxycillin and tetracyclines. Primary resistance to metronidazole reaches 80-90% in tropical countries and may reach 50% in some European countries. Primary resistance to macrolides does occur but at a much lower level, although apparently linked to the level of consumption of these drugs in a given country. Resistance may also be acquired during monotherapy with antibiotics. Most of the antimicrobial agents, except bismuth salts, have a systemic effect. Nevertheless, their activity is dependent on the pH of the stomach because H. pylori lives in the mucus. Compounds that may achieve high mucosal concentrations, such as macrolides, are effective when the stomach pH is raised. The growth of H. pylori as sessile organisms may impair antibiotic efficacy. CONCLUSIONS: The best eradication rate is achieved when two antimicrobial agents are used in combination with an antisecretory compound. Amoxycillin+clarithromycin with a proton-pump inhibitor is therefore recommended.

Megraud F. et al. *Antimicrobial susceptibility testing of Helicobacter pylori in a large multicenter trial: the MACH 2 study.* Antimicrob Agents Chemother. 1999; 43(11) : 2747-52.p Abstract: Culture and susceptibility testing of Helicobacter pylori strains was performed in a large multinational, multicenter randomized clinical trial. Culture was carried out on gastric biopsy samples obtained from 516 patients at entry and had a sensitivity of 99% when the [(13)C]urea breath test was used as a reference. Susceptibility testing was performed for clarithromycin and metronidazole on 485 strains by an agar dilution method and the epsilometer test (Etest) and for amoxicillin by an agar dilution method only. Resistance to clarithromycin (>1 microgram/ml) was found in 3% of the H. pylori strains, with a perfect correlation between Etest and agar dilution methods. Resistance to metronidazole (>8 microliter/ml) was found in 27% of the strains by agar dilution, but there were important discrepancies between it and the Etest method. No resistance to amoxicillin was found. The logarithms of the MICs of the three antibiotics against susceptible

strains had a distribution close to normal. The impact of resistance was tested in the four arms of the trial. There were not enough clarithromycin-resistant strains to evaluate the impact of resistance on the cure rate of clarithromycin-based regimens. For metronidazole-resistant strains, the impact noted in the clarithromycin-metronidazole arm was partially overcome when omeprazole was added (76% eradication for resistant strains versus 95% for susceptible strains). Secondary resistance to clarithromycin occurred in strains from 12 of 105 patients (11.4%) after the failure of a clarithromycin-based regimen to effect eradication. The detection of point mutations in clarithromycin-resistant strains was performed by a combination of PCR and restriction fragment length polymorphism. Mutations (A2142G and 2143G) were found in all strains tested except one. This study stresses the importance of performing susceptibility tests in clinical trials in order to explain the results of different treatments.

Megraud F. et al. *Nitazoxanide, a potential drug for eradication of Helicobacter pylori with no cross-resistance to metronidazole.* Antimicrob Agents Chemother. 1998; 42(11) : 2836-40.p Abstract: Nitazoxanide, a thiazolide compound, and its desacetyl derivative, tizoxanide, have antimicrobial properties against anaerobic bacteria, as well as against helminths and protozoa. Because the treatment of Helicobacter pylori infection may be jeopardized by metronidazole resistance, nitazoxanide and tizoxanide were tested in vitro against these bacteria. The MICs of these two compounds were determined by agar dilution and were compared to those of metronidazole. Exposure to subinhibitory concentrations of nitazoxanide was also carried out by the method of Szybalski (W. Szybalski and V. Bryson, J. Bacteriol. 64:489-499, 1952). The MICs of nitazoxanide and tizoxanide for 103 strains ranged from 0.25 to 8 microg/ml, with the MIC at which 50% of strains are inhibited (MIC50) being 1 microg/ml and the MIC90 being 4 microg/ml, and no resistant strain was detected, whereas strains resistant to metronidazole were detected. When 10 strains were successively subcultured on medium containing nitazoxanide, no significant change in the MICs of this compound was observed. A pilot study of nitazoxanide for the treatment of H. pylori infection was carried out with 86 patients in association with 20 mg of omeprazole. An eradication rate of 83% (95% confidence interval, 64% to 94%) was obtained in a per-protocol analysis in the group receiving 1 g of nitazoxanide orally twice daily, and a few side effects were observed. The failures could not be explained by the selection of resistant strains since the MICs of nitazoxanide were similar for six pairs of isolates (proven to be the same strain by random amplified polymorphic DNA analysis in four cases) cultured before and after the treatment failure. Nitazoxanide exhibits good antimicrobial activity against H. pylori without the problem of acquired resistance which is encountered with metronidazole and has been demonstrated to have a satisfactory effect in a dose-ranging pilot study. It is therefore a good candidate to be included in treatment regimens aimed at the eradication of H. pylori.

Mehta A. et al. *A pilot programme of MRSA surveillance in India. (MRSA Surveillance Study Group).* J Postgrad Med. 1996; 42(1) : 1-3.p Abstract: This surveillance study was conducted simultaneously at three centres across India. A total of 13,610 test samples from various sites were obtained. Microbiological methods employed were similar at the three centres. Identification of S aureus was based on the recognition of the production of coagulase with positive isolates being recorded as S aureus. Both tube coagulase tests and slide coagulase test were performed. Antimicrobial susceptibility testing of the isolated strains of staphylococcus aureus and staphylococcus epidermidis to various antimicrobial discs were carried out according to standardized disk diffusion method recommended by NCCLS. Of the total 739 cultures of S aureus, 235 (32%) were found to be multiply resistant with the individual figures for resistance being 27% (Bombay), 42.5% (Delhi) and 47% (Bangalore). MRSA is emerging to be a significant problem pathogen in the surgical setting with vancomycin probably the only reliable choice for these infections.

Meier S. et al. *An in vitro investigation of the efficacy of CPC for use in toothbrush decontamination.* J Dent Hyg. 1996; 70(4) : 161-5.p Abstract: PURPOSE: A product designed as a toothbrush disinfectant containing cetylpyridinium chloride (CPC), a quaternary ammonium compound, recently was introduced. The purpose of this study was to provide additional evidence that CPC provides a practical solution for destroying residual microorganisms on air-dried toothbrushes and toothbrushes stored in a travel container. METHODS: Sterile synthetic toothbrushes were inoculated with optical density standardized laboratory cultures of Staphylococcus epidermidis or Candida albicans. Half were then disinfected with CPC and half were used as untreated controls. The toothbrushes were vortexed in sterile saline solution, diluted in a ten-fold series, and plated on 5% blood agar or Sabouraud dextrose agar. The plates were incubated at 37 degrees C in a normal atmosphere for 48 hours, and colonies were counted. RESULTS: CPC produced significant decreases in residual microorganisms. Using the CPC spray treatment on air-dried toothbrushes, Staphylococcus epidermidis essentially was reduced 100-fold, while Candida albicans had a 94% reduction of growth. Bacterial counts were higher in the samples stored in closed containers as compared to the air-dried samples. CONCLUSION: CPC appeared to be an effective toothbrush disinfectant for the organisms evaluated. It is practical and economical. CPC could easily fit into the recommendations of a practice committed to infection control.

Melhus A. et al. *First documented isolation of vancomycin-resistant Enterococcus faecium in Sweden.* Scand J Infect Dis. 1996; 28(2) : 191-3.p Abstract: In recent years enterococci, and Enterococcus faecium in particular, have emerged as important nosocomial pathogens. Of major concern is the increasing antimicrobial resistance to traditionally used agents such as ampicillin, gentamicin and vancomycin. We present a patient with prosthetic heart valves colonized with vancomycin-resistant E. faecium. This is the first reported isolation of vancomycin-resistant E. faecium in Sweden.

Melito P.L. et al. *Differentiation of clinical Helicobacter pullorum isolates from related Helicobacter and Campylobacter species.* Helicobacter. 2000; 5(3) : 142-7.p Abstract: BACKGROUND: Helicobacter pullorum, first detected in the liver and intestinal contents of poultry, was defined as a new species in 1994. This organism has since been isolated from humans with gastroenteritis. Phenotypic as well as genotypic methods have been used to identify H. pullorum associated with cases of human disease. MATERIALS AND METHODS: Clinical isolates were submitted for identification to the National Laboratory for Enteric Pathogens by Provincial Public Health Laboratories within Canada. Phenotypic characterization was conducted using a variety of growth and biochemical tests including oxidase, catalase, indoxyl acetate, H2S production in triple sugar iron (TSI) agar, antimicrobial susceptibility testing, and fatty acid analysis. Genotypic identification was performed using a polymerase chain reaction-restriction fragment-length polymorphism (PCR-RFLP) analysis of a 1-kb fragment of the Helicobacter 16S rRNA gene. RESULTS: During the last 7 years (1993-1999) a total of 11 isolates of H. pullorum were detected from patients with gastroenteritis for inclusion in this study. Typically, these isolates were oxidase and catalase positive, produced optimal growth at 42 degrees C, and produced H2S in TSI. Of these 11 isolates, 1 showed DNase activity, while another did not produce H2S in TSI, and only 2 showed tolerance to 1% bile. Antimicrobial susceptibility assays indicated that 6 of the 11 strains were resistant to nalidixic acid. The fatty acid profiles of the isolates were similar to each other and provided a distinguishing profile from the other related species. Genetically identical and distinct species-specific restriction fragment-length polymorphism (RFLP) patterns were produced using the restriction enzymes Bsr I and Dde I. CONCLUSION: Phenotypic and genotypic procedures were used to identify H. pullorum. Interspecies phenotypic variability was apparent and supported the use of a polyphasic approach for identification. Similarities to the more prominent human pathogens

Campylobacter coli and C. lari were also noted. The use of a combination of phenotypic and, in particular, genotypic markers for H. pullorum should prove valuable both for epidemiological investigations and for the diagnosis of disease related to this emerging human pathogen.

Melo-Cristino J. *Antimicrobial resistance in staphylococci and enterococci in 10 Portuguese hospitals in 1996 and 1997. POSGAR. Portuguese Study Group of Antimicrobial Resistance.* Microb Drug Resist. 1998; 4(4) : 319-24.p Abstract: During a 2-year period, 10 Portuguese hospitals located throughout the country studied antimicrobial susceptibilities of clinically relevant staphylococci and enterococci. Of more than 12,000 Staphylococcus aureus isolates tested, two main patterns were found, methicillin-sensitive organisms most of them resistant only to penicillin but a few to other antimicrobials and methicillin-resistant S. aureus (MRSA) strains (prevalence 48.2%) resistant to most of the antimicrobials tested and uniformly susceptible to vancomycin. Among coagulase-negative staphylococci (CNS), 71% of S. epidermidis (approximately 5,000 isolates tested) and 84% S. haemolyticus (approximately 1,000 isolates tested) were also resistant to methicillin as well as most other antimicrobials except vancomycin. Most of the 5,000 Enterococcus faecalis isolates tested were susceptible to ampicillin and vancomycin, in contrast to 650 E. faecium isolates, 70% of which were resistant to ampicillin and 20% to vancomycin and all other antibiotics. A high prevalence of aminoglycoside resistance occurred in both Enterococcus species. This survey showed that resistance profiles of staphylococci and enterococci hospital isolates have not changed in the last 5 years in Portugal, with the exception of the rise in vancomycin resistance in E. faecium. The high prevalence of methicillin resistance in S. aureus and in the CNS remains an issue of medical concern.

Melo-Cristino J. et al. *Streptococcus pyogenes isolated in Portugal: macrolide resistance phenotypes and correlation with T types. Portuguese Surveillance Group for the Study of Respiratory Pathogens.* Microb Drug Resist. 1999; 5(3) : 219-25.p Abstract: From January 1998 to June 1999, 302 clinical isolates of Streptococcus pyogenes were collected from 10 microbiology laboratories in Portugal. All strains were highly sensitive to penicillin (MIC90 = 0.012 mg/liter). The prevalence of erythromycin resistance was 35.8% and of tetracycline resistance 41.4%. The majority (79.6 %) of erythromycin-resistant strains were of the MLSB constitutive resistance (CR) phenotype with high-level resistance to erythromycin (MIC90 >256 mg/liter) and to clindamycin (MIC90 >256 mg/liter), 16.7% showed the M phenotype with low-level erythromycin-resistance (MIC90 = 24 mg/liter) and susceptibility to clindamycin, and four isolates showed a phenotype characterized by low-level erythromycin resistance (MIC90 = 8 mg/liter) and high-level clindamycin resistance (MIC90 >256 mg/liter), not previously described. Erythromycin resistance was not associated with invasive strains. Only minor discrepancies between disk diffusion and E-test methods were observed. T serotyping was very useful for the epidemiological characterization of the strains. The most prevalent T types were T1, T4, T9, T12, T13, and T28. A statistically significant association with resistance patterns was found: T12 with erythromycin resistance MLS(B) CR phenotype ($p< 0.001$), T4 with erythromycin resistance M phenotype ($p<0.001$), and T13 with tetracycline resistance ($p<0.01$). Because of the high prevalence of resistance, careful surveillance of S. pyogenes isolates in Portugal is essential, routine antimicrobial susceptibility testing in clinical microbiology laboratories should be strongly encouraged, antibiotic prescription should be reviewed, and macrolides should no longer be used in the empirical therapy of acute pharyngitis.

Meltomaa S.S. et al. *Incidence, risk factors and outcome of infection in a 1-year hysterectomy cohort: a prospective follow-up study.* J Hosp Infect. 2000; 45(3) : 211-7.p Abstract: A prospective study was performed following 687 patients who underwent abdominal, vaginal and laparoscopic hysterectomy for benign conditions in Turku University Hospital. This study evaluates and compares infection after hysterectomy and determines risk factors associated with postoperative infection. Infective episodes were recorded during hospital stay, convalescence for 4 to 6 weeks at home and for 1 year of follow-up. Factors found to be statistically significant for hospital-acquired infection on univariate analysis were subsequently assessed by means of multivariate analysis. During the hospital stay 23.7% of the study population became infected, 38.1% after vaginal hysterectomy, 23.4% after abdominal hysterectomy and 3.0% after laparoscopic hysterectomy. Over half of all hospital-acquired infections were lower urinary tract infections. Infection during convalescence occurred in 19.2% of patients: 29.5% in the vaginal hysterectomy group, 17.4% in the abdominal hysterectomy group and 16.7% in the laparoscopic hysterectomy group. One year of follow-up did not find any infection directly attributable to surgery. Five factors were found to be related to in-hospital infection on multivariate analysis. These were lack of antibiotic prophylaxis, blood loss during operation, intermittent catheterization, anaemia and medication for urinary or bowel dysfunction after operation.

Memish Z. et al. *Brucella bacteraemia: clinical and laboratory observations in 160 patients.* J Infect. 2000; 40(1) : 59-63.p Abstract: OBJECTIVES: To describe the clinical, serological, and prognostic features of bacteraemic brucellosis in an endemic region. METHODS: Retrospective case series of 160 patients admitted from 1983 to 1995 to a hospital providing secondary and tertiary level medical care in Saudi Arabia. All patients had positive blood cultures for Brucella species, predominantly Brucella melitensis. RESULTS: Bacteraemia was documented in 38% of 545 cases of brucellosis admitted to our institution during the study period. The main clinical syndromes were febrile illness alone (44%) or fever with arthritis (42%). Of 68 isolates that were speciated, 93% were Brucella melitensis. Initial agglutinating antibody titre was > or =1:320 in 96% of the patients. Antimicrobial resistance of B.melitensis isolates was: co-trimoxazole, 29%; rifampicin, 3.5%; streptomycin, 0.6%; and tetracycline, 0.6%. No increase in resistance was noted over the 13-year study period. Commonly used antimicrobial regimens consisted of streptomycin plus tetracycline or rifampicin plus doxycycline given for 6 weeks. Seven patients (5%) had relapse of their symptoms after antimicrobial therapy. Three of these had infective endocarditis with repeated bacteraemia. These patients required aortic valve replacement and recovered after surgery. The remaining four patients responded to a second course of therapy. CONCLUSIONS: Brucella bacteraemia is an acute febrile disease often associated with rheumatologic complaints. Most patients have an agglutinating antibody titre > or =1:320 and respond well to standard chemotherapy regimens with low mortality.

Menasalvas A. et al. *[Infective endocarditis caused by unusual microorganisms].* Rev Esp Cardiol. 1998; 51 Suppl 2 : 79-85.p Abstract: All series of infective endocarditis had a variable proportion of cases without an etiologic agent because all cultures were negative. New microbiologic techniques have permitted the discovery of the role of many microorganisms in infective endocarditis. C. burnetii is an increasing causative agent of subacute infective endocarditis. In the diagnosis, to the detection of antiphase-I antibodies, immunohistochemical, molecular techniques and cellular cultures have been added. Total cure is difficult to obtain. The combination of doxicicline plus ciprofloxacin for at least 3 years has been proposed as the treatment of choice. Surgery must be reserved for patients with cardiac insufficiency. Less than 2% of cases of acute brucellosis are complicate with infective endocarditis. Infective endocarditis produces serious and rapid valvular destruction with high mortality rates if valve surgery is not performed. For medical treatment at least 3 active agents are required. Bartonella has recently been described as an etiologic agent of infective endocarditis. It mainly affects to homeless people living in poor hygienic conditions. The aortic valve is most commonly involved and, frequently, valve insufficiency requires valve replacement. Blood culture isolation needs long incubation periods. Parenteral nutrition, immunosuppression, wide spectrum antibiotic

regimens, intravenous drug addiction and cardiovascular surgery are risk factors previously described in the development of fungal endocarditis. C. albicans and Aspergillus spp. are most frequent etiologic agents. Infective endocarditis should be suspected in any patient with systemic fungal disease. Blood cultures are often negative except for Candida spp. Peripheral emboli and large vegetations are frequent. Mortality is high, antifungal therapy combined with surgery is the treatment of choice. Legionella, Mycoplasma, Chlamydia, Mycobacteria, viruses are potential agents of infective endocarditis, and difficult to diagnose because of special culture requirements. Epidemiological clues, serologic and molecular techniques and blood cultures could identify them.

Mendes C. et al. *Evaluation of the Antimicrobial Activity of Sparfloxacin, Relative to Other Oral Antibiotics Against 1,125 Bacterial Isolates from 10 Medical Centers in Brazil*. Braz J Infect Dis. 1998; 2(1) : 18-24.p Abstract: A multicenter study was carried out in order to compare the in vitro activity of sparfloxacin to ciprofloxacin, amoxicillin/clavulanic acid, cephalexin, cefuroxine and azithromycin, against 1,125 microorganisms recently isolated from clinical specimens, most of them representative of respiratory tract infections. Sparfloxacin demonstrated potent action and was more active than the beta-lactam agents and azithromycin against most of the bacterial strains tested. Sparfloxacin was more potent (96% and 95% sensitivity, with MIC(90) of 0.19mug/mL and 0.5mug/mL, respectively)than the other antimicrobial agents tested against the Enterobacteriaceae family (Escherichia coli and Elebsiella pneumoniae). It was found to be equivalent in activity to ciprofloxacin (96% and 91% sensitivity and MIC(90) of 0.25 and 0.75mug/mL, respectively). Sparfloxacin was also found to be very active against the most fastidious microorganisms commonly associated to respiratory tract infections such as the penicillin-susceptible and resistant Streptococcus pneumoniae (MIC(90) 0.5mug/mL and 0.38mug/mL, respectively), ampicillin-susceptible and -resistant Haemophilus influenzae (MIC(90) 0.016mug/mL and 0.38mug/mL, respectively), beta-lactamase producing Moraxella catarrhalis (MIC(90) 0.032mug/mL) and non beta-lactamase producing M.catarrhalis (MIC(90) 0.5mug/mL).

Mendes C.M. *[In vitro activity of cefetamet compared with other antimicrobial agents against bacteria isolated from respiratory tract infections]*. Rev Assoc Med Bras. 1997; 43(1) : 47-52.p Abstract: Cefetamet pivoxil is a new beta lactamase orally stable administered cephalosporin. Antimicrobial resistance among respiratory pathogens has become an important problem for both the physician and the microbiologist and the patterns of resistance vary greatly depending on geographic location, often requiring in vitro susceptibility testing of isolates. PURPOSE: The in vitro activity of cefetamet, the microbiologically active metabolite of the prodrug cefetamet pivoxil, was compared with other 11 drugs against 376 bacterial strains recently isolated from patients with respiratory tract infections. METHODS: The comparative activity in vitro of cefetamet and other 11 antimicrobial agents was measured against 376 bacterial strains isolated from patients with respiratory tract infections, during a six month period. Through the determination of minimum inhibitory concentration by the microdilution technique, patterns of antimicrobial resistance were reported. RESULTS: Cefetamet showed high in vitro activity against all the bacterial tested, possessing a spectrum of activity similar to that other recently developed oral cephalosporins. The good activity of cefetamet against beta-lactamase producing isolates, like Moraxella catarrhalis, can be due to its beta-lactamase stability. At a concentration of 1.0 microgram/mL, cefetamet inhibited 97% of all the tested bacteria. CONCLUSION: The MIC90 of the cumulative susceptibility results of the 12 antimicrobics tested in the 376 strains studied, confirm the excellent activity of cefetamet against the common respiratory tract pathogens.

Mendes C.M.F. et al. *Estudo comparativo da atividade in vitro da apicilina/sulbactam e outros agentes antimicrobianos frente a bactérias isoladas de diversos materiais clínicos.* J. bras. patol. 1997; 33(1) : 8-16.p Abstract: Um total de 4.813 amostras bacterians, recentemente isoladas de diferentes materiais clínicos, foram testadas frente a 33 diferentes antimicrobianos, pelo método da difusao e disco e analisados de acordo com os padräes estabelecidos pelo National Commitee for Clinical Laboratory Standards (NCCLS). Os resultados mostraram que a Ampicilina/Sulbactam apresentou uma açao extremamente eficaz frente à grande maioria das bactérias estudadas, 92,16 por cento de amostras sensíveis, quando comparado com a Ampicilina (54,63 por cento) e com os demais antimicrobianos testados. A Ampiclilina/Sulbactam mostrou-se também bastante eficiente frente a microorganismos fastidiosos, como o H. influenzae e N. gonorrhoeae, com 100 por cento das amostras testadas sensíveis. Concluímos que a Ampicilina/Sulbactam é um antibiótico com potente atividade "in vitro" frente às bactérias mais comumente isoladas de processos infecciosos. (AU).

Mendez-Alvarez S. et al. *Glycopeptide resistance in enterococci*. Int Microbiol. 2000; 3(2) : 71-80.p Abstract: The selective pressure resulting from the extensive use of antibiotics over the last 50 years has led to the emergence of bacterial resistance and to the dissemination of resistance genes among pathogenic microorganisms. Consequently, we are now at serious risk of suffering intractable, life-threatening infections. The progressive emergence and rapid dissemination of resistance to glycopeptides, the last resort for treating nosocomial infections with enterococci resistant to usual antibiotics, constitute one of the most dramatic examples of such resistance. Enterococci are normal human commensals, but are also a frequent cause of nosocomial urinary tract infections and nosocomial bacteremia. Enterococcus faecalis causes 80 to 90% of human enterococcal infections, while Enterococcus faecium accounts for most of the remainder. During the last decade, our understanding of the genetics and biochemical basis of resistance to glycopeptides has increased greatly. Furthermore, the application of molecular methods for the diagnosis of glycopeptide-resistant enterococci has provided new insights into the epidemiology of enterococcal infections.

Mendonca S. et al. *Prevalence of Helicobacter pylori resistance to metronidazole, clarithromycin, amoxicillin, tetracycline, and furazolidone in Brazil*. Helicobacter. 2000; 5(2) : 79-83.p Abstract: BACKGROUND: Helicobacter pylori infection is associated with a wide range of digestive diseases and is very prevalent in developing countries, although few data exist on the susceptibility of H. pylori to antimicrobials commonly used in eradication schedules in these countries. The aim of this study was to evaluate the resistance of H. pylori to metronidazole, clarithromycin, amoxicillin, tetracycline, and furazolidone in dyspeptic Brazilian patients. Material and Methods. Ninety consecutive H. pylori-positive patients were enrolled. Resistance was evaluated by an agar dilution test. RESULTS: Resistance to metronidazole was detected in 38 patients (42%); to amoxicillin in 26 individuals (29%); to clarithromycin in 6 patients (7%); to tetracycline in 6 patients (7%); and to furazolidone in 4 individuals (4%). Thirteen strains were resistant to two agents, and eight strains were resistant to three antimicrobials. CONCLUSIONS: These results confirm the need for culture and susceptibility testing to define H. pylori resistance patterns in particular geographical areas before the general use of an eradication schedule. They also suggest the possibility of resistance to such antimicrobials as amoxicillin or tetracycline in geographical areas with a high prevalence of H. pylori infection and still not fully evaluated for antimicrobial susceptibility.

Menezes C.M. et al. *In vitro evaluation of erythromycin in chloroquine resistant brazilian P. falciparum freshly isolates: modulating effect and antimalarial activity evidence*. Rev Inst Med Trop Sao Paulo. 1999; 41(4) : 249-53.p Abstract: Erythromycin, a reversal agent in multidrug-resistant cancer, was assayed in chloroquine resistance modulation. The in vitro microtechnique for drug susceptibility was employed using two freshly isolates of Plasmodium falciparum from North of Brazil. The antimalarial effect of the drug was confirmed, with an IC50

estimates near the usual antimicrobial therapy concentration, and a significant statistical modulating action was observed for one isolate.

Meng J.C. et al. *New antimicrobial mono- and sesquiterpenes from Soroseris hookeriana subsp. erysimoides.* Planta Med. 2000; 66(6) : 541-4.p Abstract: A new monoterpene and a new guaianolide were isolated from the aerial parts of the Tibetan medicinal plant Soroseris hookeriana subsp. erysimoides (Asteraceae), in addition to (1R,4R,5R)-5-hydroxybornan-2-one 5-O-beta-D-glucopyranoside, beta-sitosterol, daucosterol, diosmetin, isoluteolin, p-methoxybenzoic acid, isovanillic acid, two phenylmethanol derivatives (vanilioloside and phenylmethanol glucopyranoside), and five guaianolides [3 beta,8 beta-dihyroxyguaia-4(15),10(14),11(13)-triene-12,6 alpha-olide, dentalactone, 10 alpha-hydroxy-8-deoxy-10,14-dihydrodeacylcinaropicrin, glucozaluzanin C and 8-epideacylcinaropicrin glucoside]. By a combination of spectroscopic methods (IR, EI-MS, 1H- and 13C-NMR, and DEPT), the structure of the new guaianolide was established as 3 beta,8 beta-dihydroxy-11 alpha H-guaia-4(15),10(14)-diene-12,6 alpha-olide, and that of the new monoterpene as (1R,4R,5R)-5-benzoyloxybornan-2-one. The antimicrobial activity of all isolates except the two sterols were measured using Escherichia coli, Bacillus subtilis, Staphylococcus aureus, Candida albicans, Aspergillus niger, and Trichophyton rubrum as test microorganisms. The new guaianolide was shown to be equally active (MIC: 50 micrograms/ml) against E. coli, B. subtilis and A. niger. The new monoterpene inhibited exclusively the growth of B. subtilis with MIC at 25 micrograms/ml. p-Methoxybenzoic acid and isovanillic acid were inhibitory against A. niger (MIC: 25 micrograms/ml), the latter being also active against B. subtilis with MIC at 25 micrograms/ml. The flavonoids diosmetin and isoluteolin almost equally inhibited the growth of B. subtilis (MIC: 25 micrograms/ml) and the human pathgenic fungus T. rubrum (MIC: 50 micrograms/ml).

Mercer B.M. et al. *Antibiotic use in pregnancy and drug-resistant infant sepsis.* Am J Obstet Gynecol. 1999; 181(4) : 816-21.p Abstract: OBJECTIVE: We sought to evaluate the effect of antepartum and intrapartum antibiotic use on antimicrobial-resistant neonatal sepsis. STUDY DESIGN: We analyzed perinatal outcomes for 8474 pregnancies (8593 live births) delivered at 6 hospitals. Data were collected regarding maternal antibiotic use and perinatal course, neonatal cultures, and outcomes. The diagnosis of confirmed neonatal sepsis required at least one positive blood or cerebrospinal fluid culture. Neonatal cultures were evaluated on the basis of the occurrence and timing of maternal antibiotic exposure. RESULTS: There were 96 neonates with confirmed sepsis (11.2/1000 live births). Sepsis was 19.3-fold more common after preterm birth (57 vs 3. 1/1000; P <.001), with 76% of septic infants being delivered preterm. Forty-five percent of pathogens were ampicillin resistant. Ampicillin resistance increased with preterm birth (50% vs 26%; P =. 04), antepartum antibiotics (57% vs 34%; P =.03), intrapartum antibiotics (55% vs 28%; P <.01), and any prenatal antibiotic exposure (52% vs 22%; P =.01). Infection with an organism resistant to at least one maternal antibiotic was more common with intrapartum antibiotic exposure than with antepartum exposure only (57% vs 17%; P =.01). Regarding early-onset sepsis (n = 55), ampicillin resistance was more common with intrapartum antibiotics (50% vs 16%; P <.01), and resistance to at least one maternally administered antibiotic was more frequent with intrapartum exposure (56.7% vs 0%; P <.01). CONCLUSIONS: Maternal antibiotic treatment is associated with neonatal sepsis by organisms resistant to ampicillin and to maternally administered antibiotics.

Merchant M. et al. *Incidence of nosocomial pneumonia in a medical intensive care unit and general medical ward patients in a public hospital in Bombay, India.* J Hosp Infect. 1998; 39(2) : 143-8.p Abstract: We prospectively studied the incidence of hospital-acquired pneumonia in 1886 consecutive admissions to an 1800 bed hospital in Bombay; 991 of them to general medical wards and 895 to a 17-bed medical intensive care unit (ICU). The average bed occupancy in the general wards was 56 patients in a ward with 40 beds. Staffing in the general ward was two nurses for 56 patients, and in the ICU three nurses for 17 beds. One hundred and sixty-eight patients developed nosocomial pneumonia: 18 (1.8%) in general wards and 150 (16.7%) in the ICU. Common isolates included Pseudomonas spp (44%) and Klebsiella spp (34%). The most frequently used antibiotics were cefotaxime (34%), amikacin (25%), gentamicin (23%) and ofloxacin (13%). Crude mortality in general ward patients was 88.9 vs 14.6% in patients without pneumonia. The corresponding figures for ICU patients were 67.4 vs 37.1%; 40% of the crude mortality in ICU patients with pneumonia was attributable to the infection. Infected patients stayed an additional 5.8 days in the ICU and 6.7 days in the general ward. Costs of additional stay and antibiotics accounted for 18.6% of the ICU budget. The incidence of nosocomial pneumonia was lower than expected, despite occupancy exceeding bed capacity, low nurse:patient ratios, and extensive reuse of disposable respiratory therapy equipment. Nevertheless, nosocomial pneumonia imposes a significant financial burden on the already scarce resources available for intensive care in developing countries like India.

Merino G. et al. *Bacterial infection and semen characteristics in infertile men.* Arch Androl. 1995; 35(1) : 43-7.p Abstract: Semen samples of 190 men attending an andrology clinic were evaluated with bacteriological culture and categorized as negative (group I) and positive (group II); the effect of bacteriospemia on semen characteristics was also analyzed. Semen samples from both groups were simultaneously analyzed for routine parameters such as volume, sperm count, motility, viability and morphology. The semen culture was negative in 34% and positive in 66% of the samples. From 123 samples, 157 aerobes and 8 anaerobes were recovered. The most commonly isolated organism was Staphylococchs epidermidis (in 63% of the samples), followed by Streptococchs viridans (28%), Escherichia coli (9%), Staphylococcus aureus (5%), Streptococcus faecalis (5%), beta-hemolytic Streptococcus (4%), and Enterobacter agglomerans (4%). Other microorganisms, including Klebsiella sp, Candida sp., and Proteus mirabilis, were recovered in fewer than 4% of the specimens. The comparison of semen characteristics between infected and non-infected men showed that motile spermatozoa and viability were lower when the microorganisms were present in the semen. It would appear that the bacteria can have a direct effect on semen quality with negative consequences in fertility.

Merino L.A. et al. *[Non-fermenting Gram-negative bacilli: distribution in clinical specimens and antimicrobial susceptibility].* Rev Latinoam Microbiol. 1999; 41(4) : 279-84.p Abstract: In the present work was studied the prevalence, distribution in clinical specimens, and antimicrobial susceptibility of non-fermentative Gram-negative bacilli (NFGNB) from patients attended at Hospital "Angela I. de Llano" (Corrientes, Argentina). A total of 125 strains of NFGNB were recovered from various clinical specimens from July, 1997 to December, 1998. Isolates were identified by classical biochemical tests. Drug sensitivity was performed by standard methods with cefotaxime (CTX), ceftazidime (CAZ), piperacillin (PIP), ampicillin-sulbactam (AMS), piperacillin/tazobactam (TAZ), imipenem (IMP), amikacin (AKN), gentamicin (GEN) and ciprofloxacin (CIP). The most common isolates were Pseudomonas aeruginosa (48.8%); Acinetobacter baumannii (16.8%), Acinetobacter spp. (6.4%), Chryseobacterium spp. (5.6%), Stenotrophomonas maltophilia (4%), and others (18.4%). Most of them were recovered from respiratory secretions (36.0%), and urine (26.4%). IMP was the most effective antimicrobial. Many species of NFGNB showed resistance to several antibiotics tested (CTX, GEN, AMS, and CIP). Due to multiresistance found by more prevalent NFGNB, constant survey of antibacterial sensibility are essential for a correct control and management of nosocomial infections, and ambulatory patients with some risk factors.

Merker P. et al. *Alternative microbial testing: a novel DNA-based detection system for specified microorganisms in pharmaceutical preparations.* PDA J

Pharm Sci Technol. 2000; 54(6) : 470-7.p Abstract: Fluorescence-coupled PCR technology was employed to quantify DNA segments specific for Staphylococcus aureus, Pseudomonas aeruginosa, and Enterobacteriaceae. The PCR procedure is put forward as an alternative method for detecting microbial contaminations in pharmaceutical preparations and is compared to the tests for specified microorganisms described in European Pharmacopoeia (EP) 2, 2.6.13 and the USP, chapter 61. Data presented here describe the validation of this analytical method when used for proof of absence of specified microorganisms. The detection systems were specific for the microorganisms analyzed, and led to linear results over a wide range (more than 6-7 log intervals). The correlation coefficients lay above 0.99. The precision of replicate determinations within a single test was observed to be high, the relative standard deviation being between 0.39% and 1.53%. The precision between different tests was also high, with a relative standard deviation between 0.76% and 1.91%. The sensitivity without pre-enrichment amounted to 1-10 CFU. Since determination of the specified bacteria was performed following pre-enrichment, the limit of detection amounted to 1 CFU. Equivalent results were obtained in a study on nine batches of a milky hydrophilic cream (SH-No. M 440 A) with the conventional test for microbial contamination and the PCR procedure. The data presented here strongly indicate that the use of fluorescence-coupled PCR techniques can prove the absence of specified bacteria faster and more efficiently than conventional methods.

Mermel L.A. *Prevention of intravascular catheter-related infections.* Ann Intern Med. 2000; 132(5) : 391-402.p Abstract: PURPOSE: To review the literature on prevention of intravascular catheter-related infections. DATA SOURCES: The MEDLINE database, conference proceedings, and bibliographies of review articles and book chapters were searched for relevant articles. Primary authors were contacted directly if data were incomplete. STUDY SELECTION: Studies met the following criteria unless otherwise stated: Trials were prospective and randomized; catheters were inserted into new sites, not into old sites over guidewires; catheter cultures were done by using semi-quantitative or quantitative methods; and, for prospective studies, catheter-related bloodstream infection was confirmed by microbial growth from percutaneously drawn blood cultures that matched catheter cultures. DATA EXTRACTION: Data on population, methods, preventive strategy, and outcome (measured as catheter-related bloodstream infections) were gathered. The quality of the data was graded by using preestablished criteria. DATA SYNTHESIS: The recommended preventive strategies with the strongest supportive evidence are full barrier precautions during central venous catheter insertion; subcutaneous tunneling short-term catheters inserted in the internal jugular or femoral veins when catheters are not used for drawing blood; contamination shields for pulmonary artery catheters; povidone-iodine ointment applied to insertion sites of hemodialysis catheters; specialized nursing teams caring for patients with short-term peripheral venous catheters, especially at institutions with a high incidence of catheter-related infection; no routine replacement of central venous catheters; antiseptic chamberfilled hub or hub-protective antiseptic sponge for central venous catheters; and use of chlorhexidine-silver sulfadiazine-impregnated or minocycline-rifampin-impregnated short-term central venous catheters if the rate of infection is high despite adherence to other strategies that do not incorporate antimicrobial agents (for example, maximal barrier precautions). CONCLUSIONS: Simple interventions can reduce the risk for serious catheter-related infection. Adequately powered randomized trials are needed.

Mermin J.H. et al. *Typhoid fever in the United States, 1985-1994: changing risks of international travel and increasing antimicrobial resistance.* Arch Intern Med. 1998; 158(6) : 633-8.p Abstract: BACKGROUND: Typhoid fever is a potentially fatal illness common in the less industrialized world. In the United States, the majority of cases occur in travelers to other countries. METHODS: We reviewed surveillance forms submitted to the Centers for Disease Control and Prevention, Atlanta, Ga, for patients with culture-confirmed typhoid fever between 1985 and 1994. RESULTS: The Centers for Disease Control and Prevention received report forms for 2445 cases of typhoid fever. Median age of patients was 24 years (range, 0-89 years). Ten (0.4%) died. Seventy-two percent reported international travel within the 30 days before onset of illness. Six countries accounted for 80% of cases: Mexico (28%), India (25%), the Philippines (10%), Pakistan (8%), El Salvador (5%), and Haiti (4%). The percentage of cases associated with visiting Mexico decreased from 46% in 1985 to 23% in 1994, while the percentage of cases associated with visiting the Indian subcontinent increased from 25% in 1985 to 37% in 1994. The incidence of typhoid fever in US citizens traveling to the Indian subcontinent was at least 18 times higher than for any other geographic region. Complete data on antimicrobial susceptibility to ampicillin, chloramphenicol, and trimethoprim-sulfamethoxazole were reported for 330 (13%) Salmonella Typhi isolates. Isolates from 1990 to 1994 were more likely than isolates from 1985 to 1989 to be resistant to any of these antimicrobial agents (30% vs 12%; P<.001) and to be resistant to all 3 agents (12% vs 0.6%; P<.001). CONCLUSIONS: American travelers to less industrialized countries, especially those traveling to the Indian subcontinent, continue to be at risk for typhoid fever. Antimicrobial resistance has increased, and a quinolone or third-generation cephalosporin may be the best choice for empirical treatment of typhoid fever.

Merritt K. et al. *Safety and cleaning of medical materials and devices.* J Biomed Mater Res. 2000; 53(2) : 131-6.p Abstract: A study was undertaken to evaluate different procedures to safely remove microorganisms, protein, and mammalian cells from materials and provide a suitable method for cleaning and assessing effectiveness of cleaning medical devices for reuse or for analysis of failure. Safety considerations for the personnel performing the cleaning or handling the device after cleaning are important issues. Polystyrene plates (96 well) were used to simulate device surfaces not amenable to manual scrubbing. Staphylococcus epidermidis, Candida albicans, Escherichia coli, Pseudomonas aeruginosa, and oral flora were grown in the plates. The plates were stained with crystal violet and the optical densities recorded. The results indicated that E. coli did not adhere well and Pseudomonas formed clumps that were easily detached from the surface of the plates. However, S. epi, C. albicans, and the oral organisms formed adherent biofilms that were difficult to remove from the plates. Detergents with enzymes and sodium hypochlorite (NaOCl) bleach were both effective in removing the biofilm. Other detergents and surfactants were not effective. The aldehyde agents did not remove the organisms and made further cleaning difficult. Allowing the biofilm to dry first made cleaning very difficult. Only the NaOCl bleach could subsequently remove the dried or aldehyde fixed organisms from the wells. The same 96-well polystyrene plate format was used to measure the amount of protein and cell adherence as well as the effectiveness of subsequent cleaning. Bradford reagent was used to detect protein as a measure of the cleaning efficacy. As with the bacteria, NaOCl bleach was effective at removing the protein and cells that had been dried or fixed by formalin or alcohol, whereas detergent with enzymes was not very effective. This study confirmed that used medical devices, contaminated with microorganisms, protein, and/or mammalian cells, should not be allowed to dry before cleaning and that a thorough cleaning procedure should precede sterilization or disinfection (with the exception of NaOCl bleach which also cleans). Copyright 2000 John Wiley & Sons, Inc.

Messeri A. et al. *Percutaneous central venous catheterization in small infants: axillary block can facilitate the insertion rate.* Paediatr Anaesth. 2000; 10(5) : 527-30.p Abstract: Central venous cannulation through a peripheral vein is the technique of choice in awake nonsedated critically ill infants. Such a technique has a high failure rate. We undertook a retrospective study to determine whether a brachial plexus

block performed via the axillary approach could improve the success rate for the insertion of a central venous catheter from a peripheral vein of the upper limb in small infants. Data from 128 infants, submitted or not submitted to the axillary block, were analysed. The failure rate for insertion of the central venous catheter was 27% in the group without the use of the axillary block and 9% with the axillary block (P<0.05). The use of brachial plexus block via the axillary route, although evaluated retrospectively, improves the success rate for the insertion of small diameter central venous silicon catheter from a peripheral vein of the upper limb in small infants.

Mevius D.J. et al. *[Preliminary results of antibiotic resistance monitoring in the Netherlands].* Tijdschr Diergeneeskd. 2000; 125(5) : 143-6.p Abstract: Qualitative tests are used to monitor antimicrobial resistance in bacteria of animal origin in the Netherlands. Quantitative information on trends in resistance is thus not obtained. Moreover, in general a limited panel of antibiotics is tested. The present study describes resistance in zoonotic food-borne pathogens Salmonella, Campylobacter, and Escherichia coli O157 isolated from human clinical cases and from faeces of healthy food animals in 1998 and 1999, as determined with quantitative susceptibility tests. The resistance of the indicator organisms E. coli and Enterococcus faecium isolated from faecal samples of broilers and pigs randomly sampled at slaughterhouses was also determined. For this end, faecal samples from veal calves were sampled in 1996 and 1997 at the three main Dutch veal calf slaughterhouses. In 1998 only a limited number of faecal samples of veal calves were taken at farms. For E. coli and Salmonella the following antibiotics were tested: amoxicillin, amoxicillin-clavulanic acid, piperacillin, cefotaxime, ceftazidime, imipenem, gentamicin, doxycycline, trimethoprim, trimethoprim/sulphamethoxazole, ciprofloxacin, chloramphenicol, florfenicol, carbadox, and flumequine. For E. faecium the following antibiotics were tested: amoxicillin, amoxicillin-clavulanic acid, chloramphenicol, doxycycline, erythromycin, vancomycin, teicoplanin, streptomycin ('high level' > 2000 mg/ml), gentamicin ('high level' > 500 mg/ml), ciprofloxacin, bacitracin, flavofosfolipol, salinomycin, quinupristin-dalfopristin, virginiamycin, tilmicosin, avilamycin, and everninomycin. For Campylobacter the following antibiotics were tested: erythromycin, doxycycline, gentamicin, carbadox, flavofosfolipol, ciprofloxacin, trimethoprim/sulphamethoxazole, amoxicillin, and metronidazole.

Michaelis G. et al. *[Clinical significance and effects of foreign body embolism during the use of central venous catheters].* Anasthesiol Intensivmed Notfallmed Schmerzther. 2000; 35(3) : 137-40.p Abstract: An embolism caused by catheters or puncture devices is generally a rare complication during the use of central venous catheters. Possible reasons are either mistakes on the part of the user (e.g. shearing off or tearing of catheters or Seldinger wires) or other accidental causes (e.g. faulty products, material fatigue). As patients are at risk of suffering serious injuries following an embolism, foreign bodies should be removed from the patient's cardio circulatory system as quickly and as completely as possible. Two-dimensional echo-cardiography has proved to be very helpful for diagnostics, while interventional radiology is most effective for the removal of intravascular foreign bodies.

Michailova L. et al. *Interaction of alveolar macrophages with Staphylococcus aureus and induction of microbial L-forms during infection in rats.* Int J Med Microbiol. 2000; 290(3) : 259-67.p Abstract: In vivo cell interactions between Staphylococcus aureus and rat alveolar macrophages were investigated after intranasal inoculation during a 30-days period of examination. Some dynamic characteristics of microorganisms in the macrophages were examined by electron microscopy and acid phosphatase cytochemistry. It was found that at earlier infection intervals (days 3 and 7) the ingested cocci were sequestered in phagosomes and phagolysosomes and later many of the microbial cells were digested. An interesting finding was the intracellular appearance of cell wall-defective forms (L-forms) of S. aureus at later intervals (days 14 and 30 after challenge). Infection kinetics were evaluated by isolation and enumeration of colony-forming units of S. aureus from bronchoalveolar fluid and by assessment of blood and bronchoalveolar total and differential leukocyte counts. The results indicate that induction and survival of S. aureus L-forms may occur spontaneously in vivo. This phenomenon could explain some of the mechanisms, provoking the latent and relapsing lung infections.

Michel M. et al. *Methicillin-resistant Staphylococcus aureus and vancomycin-resistant enterococci: therapeutic realities and possibilities.* Lancet. 1997; 349(9069) : 1901-6.p Abstract: During the past decade much effort has been devoted worldwide to limiting the spread of methicillin-resistant Staphylococcus aureus. However, the recent emergence of almost untreatable vancomycin-resistant enterococci has led to a new and unexpected public health problem in hospitals and the community. Moreover, the threat of transfer of glycopeptide resistance to S aureus means that development of alternative antimicrobial strategies has become urgent. Whereas major advances have been made in our understanding of methicillin and vancomycin resistance mechanisms, we still need to identify the sources and reservoirs of the genetic determinants of resistance and to discover how they disseminate in the environment. The outcome of the battle between antimicrobials and bacteria is still uncertain, but the challenge is worth meeting.

Michiels M.J. et al. *Differential increased survival of staphylococci and limited ultrastructural changes in the core of infected fibrin clots after daptomycin administration.* Antimicrob Agents Chemother. 1996; 40(1) : 203-11.p Abstract: A possible explanation for the difficulties encountered in curing deep fibrin-embedded infections is that antibiotic diffusion inside the infected fibrin matrix is not homogeneous and is insufficient to neutralize the pathogen. To evaluate this conjecture, the differential pharmacodynamics of daptomycin in fibrin clots infected with methicillin-susceptible and -resistant Staphylococcus aureus and Staphylococcus epidermidis was estimated. Daptomycin (20 or 50 mg/kg of body weight) was infused over 30 min. Fibrin clots and blood samples were evaluated from 0.5 to 42 h after the injections. The half-lives of daptomycin in serum and fibrin clot were close to identical after the two doses and averaged 5.4 and 22 h, respectively. The mean areas under the concentration-time curves from 0 to 42 h (AUC0-infinity) for daptomycin concentrations in serum and infected clots were 575 +/- 36.7 and 215 +/- 6.2 micrograms/g/h after administration of 20 mg/kg and 1,089 +/- 39.9 and 326 +/- 16.8 micrograms/g/h after administration of 50 mg/kg. A concentration gradient from the periphery to the core of the clots was observed in many clots up to 18 h after treatment. Mean peak concentrations in the core of the clots reached 60% of the peripheral values ($P < 0.05$) and were delayed for at least 3 h compared with the peripheral peak concentrations. AUC0-42 h of daptomycin concentration in the periphery and the core of clots were significantly different ($P < 0.01$). Survival of microorganisms was better in the core than in the periphery, with as much as a 3 log10 CFU/g difference between the center and the surface of the clot. Bacterial examination by transmission electron microscopy also showed noticeable differences in ultrastructural changes between those in the periphery and those in the core of the clots. In conclusion, the pharmacokinetics of daptomycin are significantly different at the periphery and within the core of fibrin clots, which may have led to the higher bacterial survival in the core of clots. Limited diffusion of daptomycin in fibrin, an essential component of the vegetation in bacterial endocarditis, could explain at least in part some of the treatment failures.

Midani S. et al. *Mycobacterium fortuitum infection of ventriculoperitoneal shunt.* South Med J. 1999; 92(7) : 705-7.p Abstract: Mycobacterium fortuitum is one of the rapidly growing mycobacteria found in soil, dust, and water. It can be isolated as a normal colonizing organism, but as a pathogen this organism causes mainly skin and soft tissue infection preceded by trauma. A wide variety of infections can occur

in individuals with predisposing conditions. Central nervous system infection with M fortuitum is rare, and meningitis occurs after surgery or trauma. We believe that ventriculoperitoneal (VP) shunt infection with this organism has not been reported in the literature. Practitioners should be aware of this rare entity and should suspect it in the presence of cerebrospinal fluid pleocytosis with sterile culture, and after trauma, surgery, or manipulation of the VP shunt hardware. Mycobacterium fortuitum is resistant to most first-line and second-line antituberculous drugs, and treatment should include surgical debridement in addition to prolonged antimicrobial therapy.

Midolo P.D. et al. *Antimicrobial resistance testing of Helicobacter pylori: a comparison of Etest and disk diffusion methods.* Pathology. 1997; 29(4) : 411-4.p Abstract: Routine antimicrobial resistance testing of Helicobacter pylori is more commonly performed since the correlation between metronidazole resistance and failure to eradicate using this drug, has been made. While resistance testing of H. pylori by Etest is simple to perform, it is expensive compared to disk diffusion methods. In this study the Etest was compared with a modified Kirby-Bauer disk diffusion (NCCLS) method for routine resistance screening of H. pylori. Fifty one pre-treatment isolates were tested against amoxycillin, metronidazole, tetracycline and erythromycin by both Etest and disk diffusion using NCCLS guideline strength disks. Clarithromycin was tested by Etest only. Nitroimidazole and macrolide resistance were detected using the modified Kirby-Bauer disk diffusion method which correlated with Etest minimum inhibitory concentration (MIC). Resistance rates were 49% for metronidazole and 8% for clarithromycin. Cross resistance occurs with macrolides against H. pylori and allows testing of erythromycin to predict resistance to clarithromycin. The very low MICs obtained with H. pylori against amoxycillin and tetracycline require the use of Etest or lower strength disk methods to be used.

Midolo P.D. et al. *Metronidazole resistance: a predictor of failure of Helicobacter pylori eradication by triple therapy.* J Gastroenterol Hepatol. 1996; 11(3) : 290-2.p Abstract: Triple therapy (bismuth and two antibiotics) will eradicate Helicobacter pylori infection in 70-90% of subjects. Treatment failure has been attributed to patient compliance and antimicrobial drug resistance. The aim of this study was to examine factors influencing the eradication of H. pylori following triple therapy. Thirty seven subjects with H. pylori cultured from antral biopsies were treated with colloidal bismuth subcitrate (120 mg qid for 2 weeks), metronidazole (400 mg tid for 1 week) and amoxycillin (500 mg tid for 1 week). Pretreatment isolates of H. pylori were tested for metronidazole susceptibility by agar dilution according to the National Committee for Clinical Laboratory Standards guidelines. Factors including age, sex, clinical diagnosis and metronidazole resistance were evaluated in relation to H. pylori. The overall metronidazole resistance was 32%. Metronidazole resistant strains were more frequent in females, with a resistance rate of 54%. Helicobacter pylori eradication occurred in 68% of patients with a metronidazole susceptible stain and only 17% of patients with a metronidazole resistant strain ($P < 0.03$). Helicobacter pylori eradication is dependent upon susceptibility to metronidazole. This data would support the role for routine metronidazole susceptibility testing using appropriate standardized methods when triple therapy is to be considered.

Miguel M.A.L. et al. *Characterization of enterococcus strains isolated from ready-to-eat foods.* Rev. microbiol. 1995; 26(2) : 121-4.p Abstract: Treze estirpes de Enterococcus faecalis e 5 de E. faecium isoladas a partir de alimentos foram estudadas em relação a produção de termonuclease (TNase), atividade hemolítica em sangue humano e de coelho e sensibilidade a antimicrobianos. Não foi observada a produção de TNase e á-lactamase, reastência a vancomicina e a altos níveis de aminoglicosídeos.

Mihajlovic-Ukropina M. et al. *[Significance of normal oropharyngeal flora in the development of streptococcal pharyngitis and outcome of penicillin therapy].* Med Pregl. 1998; 51(5-6) : 275-8.p Abstract: Pharyngitis is one of the most frequent diseases in children. The most important of the bacterial infections is due to Streptococcus pyogenes. For many years, penicillin is considered to be the drug of choice for streptococcal pharyngitis, although failure rates of up to 20% have been reported. One of possible explanations for penicillin treatment failure is presence of other species of bacteria in the normal oropharyngeal flora that can interfere with colonization and growth of Streptococcus pyogenes and influence the development of pharyngitis. A wide variety of microorganisms, including alpha-haemolytic streptococci and anaerobic bacteria, are present within the oropharynx (table 1). The strain of alpha-haemolytic streptococci is in interference with Streptococcus pyogenes. By producing bacteriocins, they inhibit colonization and growth of Streptococcus pyogenes and assist in its eradication. Anaerobic bacteria may play a direct or indirect role in development of pharyngitis. They may be directly responsible for specific forms of pharyngitis or contribute indirectly with possibility of synergy between them and Streptococcus pyogenes. Beta-lactamase-producing aerobic and anaerobic organisms may contribute to penicillin treatment failure. By producing beta-lactamase within the tonsillar tissue, they destroy penicillin and protect streptococci from the antibacterial effect of penicillin. Pharyngeal bacterial flora may vary according to the state of the patient (Figure 1). During an acute infection and in the cases of treatment failure and recurrent pharyngitis the number of alpha-haemolytic streptococci declines, while there is an increase in the number of anaerobic and beta-lactamase-producing organisms. After successful treatment the number and type of bacteria is similar to those found within normal tissue. Knowing the distribution and changes in pharyngeal bacterial flora is important for choosing the optimal drug for treatment of streptococcal pharyngitis. Although penicillin reduces the number of interfering beta-haemolytic streptococci, because of its advantages, if remains the drug of choice for the treatment of streptococcal pharyngitis. In cases of treatment failure and recurrent infections cephalosporins and macrolides may be a useful alternative to penicillin because they possess relatively poor activity against alpha-haemolytic streptococci, resistance to beta-lactamase and because of better penetration into tonsilar tissue.

Mikhailov I.P. et al. *[Treatment of pyogenic complications after reconstructive surgery on blood vessels with use of synthetic prosthesis].* Khirurgiia (Mosk). 1998; (10) : 54-7.p Abstract: Factors influencing result of surgical treatment of patients with festered postoperative wounds have been studied. Algorythm of determination of tactics for examination and treatment of this category of patients was established. The results obtained are based on the analysis of personal surgical treatment autcomes in 1526 patients with decompensated ischemia of extremities and 57 patients with clinical symptoms of deep suppuration. Division of purulent complications into primary and secondary is suggested. Effectiveness of various modes of prophylaxis was studied—systemic and indirect endolymphatic route for introduction antibiotics, intraoperative application of pellicle ESBA, usage of antimicrobial vascular prosthesis "SISAN". The best results were obtained in the two latter methods. Various methods of surgical treatment in infected vascular prosthesis are reviewed.

Millesimo M. et al. *Group A streptococci: evaluation of in vitro resistance to two macrolides.* Microbios. 1995; 82(332) : 141-7.p Abstract: In recent years an increase in severe group A streptococcal infections has been observed. The possible relation between the failure of therapy and an increase of resistance to antibiotics, which are often used for streptococcal infections (clarithromycin and erythromycin), has been assessed in vitro. Streptococcus pyogenes strains tested for susceptibility were isolated in different years from pharyngotonsillar swabs of symptomatic children and typed; another nine strains came from the American Type Culture Collection. The evaluation of antimicrobial activity demonstrated that the percentage of resistance of these bacteria to the two macrolides was 4, 4.4 and 15.5%, respec-

tively, for strains isolated in 1990, 1991 and 1994. Clarithromycin showed a better antistreptococcal, above all bactericidal, activity. The presence of M protein in streptococci does not seem to modify the kinetic activity of the two drugs, while a slower bactericidal effect was observed against capsulated strains. The resurgence of severe group A Streptococcus infections may be due to an increase in the circulation of strains with a capsule expression, which is critical also for resistance to phagocytic killing.

Millsap K.W. et al. *Adhesion and surface-aggregation of Candida albicans from saliva on acrylic surfaces with adhering bacteria as studied in a parallel plate flow chamber.* Antonie Van Leeuwenhoek. 1999; 75(4) : 351-9.p Abstract: Adhesive interactions between Candida albicans and oral bacteria are generally thought to play a crucial role in the microbial colonization of denture acrylic, which may lead to denture stomatitis. This study investigated the influence of saliva on the adhesive interactions between C. albicans and Streptococcus sanguis or Actinomyces naeslundii on denture acrylic. First, bacteria were allowed to adhere to the acrylic surface from a flowing suspension, and subsequently yeasts were flowed over the acrylic surface. The organisms were assayed in the presence or absence of human whole saliva. All experiments were carried out in a parallel plate flow chamber and enumeration was done in situ with an image analysis system. In the absence of adhering bacteria, adhesion of C. albicans from buffer was more extensive than from saliva. However, in the presence of adhering bacteria, yeast adhesion from saliva was increased with respect to adhesion of yeasts from buffer, indicating that specific salivary components constitute a bridge between bacteria and yeasts. In all cases, yeast aggregates consisting of 3 to 5 yeast cells were observed adhering to the surface. A surface physico-chemical analysis of the microbial cell surfaces prior to and after bathing the microorganisms in saliva, suggests that this bridging is mediated by acid-base interactions since all strains show a major increase in electron-donating surface free energy parameters upon bathing in saliva, with no change in their zeta potentials. The surface physico-chemical analysis furthermore suggests that S. sanguis and A. naeslundii may use a different mechanism for adhesive interactions with C. albicans in saliva.

Minnock A. et al. *Photoinactivation of bacteria. Use of a cationic water-soluble zinc phthalocyanine to photoinactivate both gram-negative and gram-positive bacteria.* J Photochem Photobiol B. 1996; 32(3) : 159-64.p Abstract: The photosensitization of microorganisms is potentially useful for sterilization and for the treatment of certain bacterial diseases. Until now, any broad spectrum approach has been inhibited because, although Gram-positive bacteria can be photoinactivated by a range of photosensitizers, Gram-negative bacteria have not usually been susceptible to photosensitized destruction. In the present work, it has been shown that the Gram-negative bacteria Escherichia coli and Pseudomonas aeruginosa, as well as the Gram-positive bacterium Enterococcus seriolicida, can be photoinactivated when illuminated in the presence of a cationic water-soluble zinc pyridinium phthalocyanine (PPC). The degree of photoinactivation is dependent on both the concentration of PPC and the illumination time. In contrast, the three bacteria are not photoinactivated by illumination in the presence of a neutral tetra-diethanolamine phthalocyanine (TDEPC) or negatively charged tetra-sulphonated phthalocyanine (TSPC). Uptake studies have revealed that the lack of activity of TSPC is due to the fact that it has very little affinity for any of the organisms. However, the issue appears to be more complex than simply the gross levels of cellular uptake, since TDEPC and PPC are both taken up by the organisms but only PPC shows activity. This indicates that the localization and subcellular distribution of the phthalocyanines may be a crucial factor in determining their cell killing potential. Further analysis of the uptake data has revealed a cell-bound photosensitizer fraction, which remains tightly associated after several washings, and another weakly bound fraction, which is removed by successive washings. Analysis of the cell killing curves, carried out after successive washings of E. coli exposed to PPC, has revealed that it is the tightly associated fraction that is involved in the photosensitization. Taken together with other data, these results suggest that cationic photosensitizers may have a broader application in the photoinactivation of bacterial cells than the anionic or neutral photosensitizers commonly used in photodynamic therapy.

Minto E.C. et al. *Identification and medical importance of coagulase-negative staphylococci species.* Sao Paulo Med J. 1999; 117(4) : 175-8.p Abstract: A total of 126 coagulase-negative staphylococci strains (CNS) were isolated from blood samples and from the intravenous catheters and cerebrospinal fluid of 103 patients admitted to the University Hospital of Ribeirao Preto. Staphylococcus epidermidis (68.2%), S. haemolyticus (11.1%) and S. hominis (3.2%) were the most frequent species. The last two CNS showed greater resistance to antimicrobial agents than S. epidermidis. CNS were the agents of infection in 10. 7% of the patients and the agents of intravenous catheter colonization in 18.4% of the cases.

Miranda Novales M.G. et al. *Streptococcus pneumoniae: low frequency of penicillin resistance and high resistance to trimethoprim-sulfamethoxazole in nasopharyngeal isolates from children in a rural area in Mexico.* Arch Med Res. 1997; 28(4) : 559-63.p Abstract: Due to the changes in the frequency of penicillin-resistant strains of S. pneumoniae, it is necessary to perform surveillance studies of bacterial resistance. Isolates from the upper respiratory tract of asymptomatic children have been useful. There is no information about the difference between isolates from children with and without upper respiratory tract infection (URTI). The objective of the authors in this paper is to establish the prevalence of carrier-state, serotype and antimicrobial resistance of S. pneumoniae isolates from children with and without acute upper respiratory tract infection (URTI) in a rural area in Mexico. A cross-sectional comparative study was performed in Tlaxcala, Mexico. Children from one month 5 years of age were included. Nasopharyngeal swabs were obtained. Identification was done by international microbiology standards. Serotyping was done by the capsular Quellung test. The susceptibility testing was performed by the agar dilution method. Four-hundred and fifty patients were included. S. pneumoniae was isolated in 134 children (29.7%). Frequency of carriers was greater in patients with URTI (107/323) than without URTI (27/127) (33.1% vs. 21.1% p = 0.012, OR 1.84, IC 95% 1.1-3.08). The six most frequent serotypes were: 6B (16.4%); 19F (11.9%); 19A (6.7%); 14, 23F, and 35 (5.2% each), with no difference among the groups. Only 3% of the strains had high level resistance to penicillin, and 12.6% had intermediate resistance, and for ampicillin 4%, amoxicillin 4%, amoxicillin-clavulanate 4%, ceftriaxone 3%, cefotaxime 1.5%, erythromycin 6%, miocamycin 3%, chloramphenicol 4%, and vancomycin 0%. Trimethoprim-sulfamethoxazole resistance was very high (42%). In conclusion, colonization is higher in children with URTI. Five of the most frequent serotypes identified in this study were the same as those identified in patients with S. pneumoniae invasive diseases in Mexico City. In Tlaxcala, Mexico, beta-lactams could be the drug of choice for the treatment of S. pneumoniae lower respiratory tract infections. It is necessary to perform clinical assays to evaluate the efficacy of trimethoprim-sulfamethoxazole due to the high resistance in vitro.

Miravitlles M. et al. *Relationship between bacterial flora in sputum and functional impairment in patients with acute exacerbations of COPD. Study Group of Bacterial Infection in COPD.* Chest. 1999; 116(1) : 40-6.p Abstract: STUDY OBJECTIVES: To investigate the possible relationship between functional respiratory impairment measured by FEV1 and isolation of diverse pathogens in the sputum of patients with exacerbations of COPD. DESIGN: Multicenter, cross-sectional, epidemiologic study. SETTING: Pneumology units in six secondary or tertiary hospitals in Spain. PATIENTS: Ninety-one patients with acute exacerbation of COPD were included. INTERVENTIONS: A quantitative sputum culture was performed, and bacterial growth was considered significant only when the germ was isolated at concentrations > 10(6) cfu (> 10(5) for Streptococcus

pneumoniae) in samples with < 10 epithelial cells and > 25 leukocytes per low magnification field (x 100). RESULTS: Germs isolated were the following: Haemophilus influenzae (20 cases; 22%), Pseudomonas aeruginosa (14 cases; 15%), S. pneumoniae (9 cases; 10%), Moraxella catarrhalis (8 cases; 9%), other gram-negative bacteria (7 cases; 7%), and non-potentially pathogenic microorganisms (non-PPMs; 33 cases; 36%). P. aeruginosa and H. influenzae were isolated more frequently among the patients with FEV1 < 50% than among those with FEV1 > 50% ($p < 0.05$). All patients with P. aeruginosa in sputum had FEV1 < 1,700 mL. FEV1 < 50% was associated with a very high risk of P. aeruginosa or H. influenzae isolation: the odds ratios (ORs) are 6.62 (95% confidence interval [CI], 1.2 to 123.6) and 6.85 (95% CI, 1.6 to 52.6), respectively. Furthermore, active tobacco smoking was associated with a high risk of H. influenzae isolation (OR, 8.1; 95% CI, 1.9 to 43.0). CONCLUSIONS: Patients with the greatest degree of functional impairment, as measured by their FEV1, presented a higher probability of having an isolation of P. aeruginosa or H. influenzae in significant concentrations in sputum during an exacerbation. The diagnostic yield of sputum in patients with an FEV1 > 50% was low, with a predominance of non-PPMs. Low FEV1 and active tobacco smoking are data that should be considered when establishing an empiric antibiotic treatment for exacerbated COPD.

Misan G.M. et al. *Cephalosporin utilisation review and evaluation.* Pharmacoeconomics. 1995; 8(2) : 100-22.p Abstract: The clinical misuse of drugs may result in preventable patient morbidity and mortality, costly remedial care, additional costs for diagnosis and management of iatrogenic disease and unnecessary wastage of healthcare resources. In recognition of this problem, drug utilisation evaluation (DUE) has been recommended as a method for identifying inappropriate or unnecessary drug use and for promoting rational therapy. Growing concern over the widespread misuse of antibiotics, together with the emergence of antimicrobial resistance and escalating expenditures, has resulted in antibiotics being the drugs most frequently chosen for DUE projects. Cephalosporin DUE is well documented as being successful for modifying cephalosporin use and for containing drug expenditure. Studies range from isolated projects to ongoing programmes that comprehensively evaluate cephalosporin use and the impact of corrective strategies. Sensible use of antibiotics requires a clear understanding of the infectious process, the clinical pharmacology of anti-infective agents and an appreciation of clinical and microbiological monitoring and assessment. Audit criteria that incorporate the above principles, and which are described in the studies reviewed in this article, will be useful for other investigators. Through its DUE programme, the Royal Adelaide Hospital has investigated the use of cephalosporins, including ceftriaxone, ceftazidime and cefoxitin. These reviews have resulted in improvements in cephalosporin use and significant cost savings. Alterations to cephalosporin use that were recommended following these reviews have not resulted in adverse changes to postoperative infection rates, clinical outcomes or adverse drug reactions. This experience, combined with that of other investigators, serves as a useful model for the promotion of rational and economical therapy with cephalosporins and other drug groups.

Mishan'kin B.N. et al. *[Database on nucleotide sequences used as primers of microorganisms].* Zh Mikrobiol Epidemiol Immunobiol. 1998; (5) : 39-43.p Abstract: The data base (DB) "Primers of microorganisms" for the accumulation and systematization of information on oligonucleotide sequences, used as primers in polymerase chain reaction, has been created. This DB includes data on primers for the laboratory diagnostics of 20 bacterial genera (Aerococcus, Aeromonas, Bartonella, Borrelia, Burkholderia, Chlamydia, Clostridium, Corynebacterium, Escherichia, Francisella, Helicobacter, Legionella, Listeria, Mycobacterium, Mycoplasma, Salmonella, Shigella, Staphylococcus, Vibrio, Yersinia) and 6 viral families (Arenaviridae, Flaviviridae, Hepadnaviridae, Herpesviridae, Picornaviridae, Retroviridae). DB contains data on 145 pairs of primers and 530 bibliographic sources. The retrospective depth of DB is 10 years (1987-1996), and it is replenished as new Russian and foreign documented sources of information arrive.

Misiewicz J.J. *Is the only good Helicobacter a dead Helicobacter?* Helicobacter. 1997; 2 Suppl 1 : S89-91.p Abstract: BACKGROUND: Vast numbers of therapeutic studies of various drug regimens used for the cure of H. pylori infection have been published. However, many of these studies have been uncontrolled, included small numbers of patients, were published only as abstracts, differed widely in dosage sizes, schedules and durations and were of insufficient statistical power to make meaningful statements concerning their efficacy. Furthermore, there are no clear or universally accepted guidelines for the treatment of H. pylori infection. Thus, there remains profound confusion among practitioners on whom and how to treat. OBJECTIVE: To critically review the currently available management strategies for H. pylori infection. METHODS: Review of the literature. RESULTS: Treatment of H. pylori requires the use of multiple drug regimens (triple therapy) which can be expensive and is often associated with side effects. Bad choice of treatments, poor patient counseling and compliance will lead to the emergence of resistant H. pylori strains. Resistance to H. pylori to metronidazole is already widespread and resistance to other antimicrobial agents is increasing. The resource/financial implications are not negligible. CONCLUSIONS: The introduction of kits that will enable the identification of pathogenic strains of H. pylori in the office setting may decrease the number of patients being given H. pylori eradication therapy, but much more evidence is needed to establish the practical value of such tests. In the meantime, as many clinicians adhere to the idea that the only good H. pylori is a dead H. pylori, the best practical policy option is education concerning the correct diagnostic methodology, correct choice of patients and the correct choice of treatment regimens. The discovery of Helicobacter pylori (H. pylori) has revolutionized our concepts of etiology, pathophysiology and treatment of many foregut diseases. Gastritis, gastric ulcer (GU), duodenal ulcer (DU), gastric cancer, MALT gastric lymphoma and other conditions are now regarded as being independent on the colonization of the stomach by H. pylori. Many aspects of pathophysiology, such as the abnormalities of gastric acid secretion in duodenal ulcer disease, now for the first time fall into a logical and comprehensible pattern.

Mitsui R. et al. *A novel operon encoding formaldehyde fixation: the ribulose monophosphate pathway in the gram-positive facultative methylotrophic bacterium Mycobacterium gastri MB19.* J Bacteriol. 2000; 182(4) : 944-8.p Abstract: A 4.2-kb PstI fragment harboring the gene cluster of the ribulose monophosphate (RuMP) pathway for formaldehyde fixation was identified in the chromosome of a gram-positive, facultative methylotroph, Mycobacterium gastri MB19, by using the coding region of 3-hexulose-6-phosphate synthase (HPS) as the hybridization probe. The PstI fragment contained three complete open reading frames (ORFs) which encoded from the 5' end, a DNA-binding regulatory protein (rmpR), 6-phospho-3-hexuloisomerase (PHI; rmpB), and HPS (rmpA). Sequence analysis suggested that rmpA and rmpB constitute an operon, and Northern blot analysis of RNA extracted from bacteria grown under various conditions suggested that the expression of the two genes is similarly regulated at the transcriptional level. A similarity search revealed that the proteins encoded by rmpA and rmpB in M. gastri MB19 show high similarity to the unidentified proteins of nonmethylotrophic prokaryotes, including bacteria and anaerobic archaea. The clusters in the phylogenetic tree of the HPS protein of M. gastri MB19 and those in the phylogenetic tree of the PHI protein were nearly identical, which implies that these two formaldehyde-fixing genes evolved as a pair. These findings give new insight into the acquisition of the formaldehyde fixation pathway during the evolution of diverse microorganisms.

Mittermayer H. *[Community-acquired pneumonia—current status of pathogen diagnosis].* Acta Med Austriaca. 1997; 24(1) : 8-9.p Abstract: Procedures for the microbiological diagnosis of acute community-acquired pneumonia are based on the expected pathogens. Although a great variety of microorganisms are able to cause community-acquired pneumonia only a few pathogens play an important role in daily practice. The most important investigations are blood cultures and sputum cultures to detect bacteria like pneumococci, Haemophilus influenzae and Staphylococcus aureus as well as antibody tests for Mycoplasma pneumonia and Chlamydia pneumonia. According to anamnesis and clinic presentation tests such as for Legionella or viruses have to be added. Sometimes also rare pathogens have to be considered such as Coxiella burnetii, Leptospira, Hantaviruses, cryptococci or Chlamydia psittaci. The standard procedure for diagnosis of tuberculosis is the microscopical examination and the standardized culture in liquid and on solid media. Amplification methods such as PCR are also useful for a rapid diagnosis. However, the application of amplification procedures alone without culture is not recommended.

Miyazawa M. et al. *Synthesis and Biological Activity of alpha-Methylene-gamma-lactones as New Aroma Chemicals.* J Agric Food Chem. 2000; 48(11) : 5406-5410.p Abstract : Seven kinds of alpha-methylene-gamma-lactones with an alkyl group at the C-4 position were synthesized according to a previously described method, with yields of 28-34%. These alpha-methylene-gamma-lactones had characteristic and unique odors. All alpha-methylene-gamma-lactones added a roast-like odor to materials. The antimicrobial effects of alpha-methylene-gamma-lactones were investigated by using a paper disk diffusion method. The results showed the alpha-methylene-gamma-lactones inhibited the growth of three bacteria (Staphylococcus aureus, Escherichia coli, and Pseudomonas fluorescens) and two fungi (Saccharomyces cerevisiae and Aspergillus niger). In particular, alpha-methylene-gamma-undecalactone and alpha-methylene-gamma-dodecalactone exhibited potent inhibition of the growth of these microorganisms compared to butyl p-hydroxybenzoate as standard antibiotic. The umu test revealed that the alpha-methylene-gamma-lactones suppressed the SOS-inducing activity of three mutagens, furylfuramide, UV irradiation, and Trp-P-1, respectively. The antimicrobial effects and the suppressive effects of SOS induction by alpha-methylene-gamma-lactones had a tendency to intensify as the number of carbons in the side chain increased.

Modai J. *High-dose intravenous fluoroquinolones in the treatment of severe infections.* J Chemother. 1999; 11(6) : 478-85.p Abstract: A bacterial infection should be considered "serious" in case of underlying disease, nosocomial origin, antibiotic resistant pathogen, and/or poor delivery of antibiotics at the site of infection. Treatment of most serious infections requires parenteral administration of antimicrobial agents. Intravenous fluoroquinolones are a class of antimicrobial agents from which physicians must choose when treating nosocomial infections. Fluoroquinolones are bactericidal antimicrobial agents that act by inhibiting DNA gyrase. They are active in vitro against most gram-negative bacteria and methicillin-susceptible staphylococci. Activity against anaerobic bacteria and streptococci is poor. The rapid development of bacterial resistance in centers with high quinolone usage is of great concern. Resistance develops most commonly in Pseudomonas aeruginosa and staphylococci. Most clinical trials with ciprofloxacin, ofloxacin, pefloxacin, the fluroquinolones currently available in France for parenteral use, are almost 10 years old. There are few studies with higher dosage and most of them have been carried out with ciprofloxacin. The findings of these studies indicate that higher dosage regimens of i.v. ciprofloxacin are much more effective against severe nososcomial infections than is the dosage of 200 mg twice daily. The higher dosage regimens resulted in greater rates of clinical cure and improvement in both monomicrobial and polymicrobial infections. Although the overall frequency of side effects to fluoroquinolones is low, seizures and allergic reactions have been attributed to their use.

Moellering R.C. Jr. *Problems with antimicrobial resistance in gram-positive cocci.* Clin Infect Dis. 1998; 26(5) : 1177-8.p Abstract: The development of antimicrobial resistance has almost invariably accompanied the therapeutic use of antimicrobial agents. Newer antimicrobials have succeeded partly but not entirely in overcoming the problem of resistance. Antimicrobial resistance in gram-positive cocci has achieved its greatest prominence in the past 15 years. There has been a steady erosion of antimicrobial activity against gram-positive cocci. The presentations in this symposium dealt with some of the important problems of antimicrobial resistance in gram-positive cocci, including methicillin resistance and multidrug resistance in staphylococci, penicillin resistance in pneumococci, and vancomycin resistance in enterococci. A related problem that warrants attention is the potential for explosive development of macrolide resistance in gram-positive cocci. This potential is particularly pertinent because the popularity of a number of new macrolides has led to a striking increase in their use. This occurrence will almost certainly be accompanied by a generalized increase in resistance in gram-positive cocci.

Moellering R.C. Jr. *Vancomycin-resistant enterococci.* Clin Infect Dis. 1998; 26(5) : 1196-9.p Abstract: Enterococci, a part of normal gut flora, are not particularly pathogenic organisms in humans. For example, they do not cause respiratory tract infections. The most frequent enterococcal infections are urinary tract infections. Despite their lack of pathogenicity, enterococci have emerged as significant nosocomial pathogens in the United States and elsewhere. Enterococci are formidable pathogens because of their resistance to antimicrobial agents. Enterococci are intrinsically resistant to beta-lactam agents and aminoglycosides and were the first bacteria to acquire vancomycin resistance. Infection control measures have been far from effective at preventing the dissemination of vancomycin-resistant enterococci in the hospital. Therapy for infections due to vancomycin-resistant enterococci presents real challenges. Most isolates remain susceptible to nitrofurantoin, but this agent is useful only for urinary tract infections. The greatest threat posed by vancomycin-resistant enterococci is the potential to transfer their resistance genes to more pathogenic gram-positive bacteria, which could produce truly frightening pathogens.

Moesby L. et al. *Ultrasonication of pyrogenic microorganisms improves the detection of pyrogens in the Mono Mac 6 assay.* Eur J Pharm Sci. 2000; 11(1) : 51-7.p Abstract : The monocytic cell line Mono Mac 6 is sensitive to pyrogens. When exposed to pyrogens secretion of interleukin-6 is induced. However, some eukaryotic pyrogenic microorganisms are not detectable. The aim of this study is to introduce a pretreatment of samples to expand the detection range of the assay. The interleukin-6 inducing capacity of a broad spectrum of UV-killed and ultrasonicated microorganisms is examined in Mono Mac 6 cells. The interleukin-6 secretion is determined in a sandwich immunoassay (DELFIA). The Mono Mac 6 assay is able to detect UV-killed Bacillus subtilis, Staphylococcus aureus and Salmonella typhimurium, but neither Candida albicans nor Aspergillus niger. After ultrasonication of the microorganisms it is possible to detect C. albicans and A. niger. The interleukin-6 inducing ability of the examined microorganisms is in no case reduced after ultrasonic treatment. However, ultrasonication of S. aureus results in a 100-fold increase in the interleukin-6 response. Even after ultrasonication Streptococcus faecalis can not be detected. Ultrasonication is an easy and simple method for expanding the detection range in the Mono Mac 6 assay.

Mogulkoc N. et al. *Acute purulent exacerbation of chronic obstructive pulmonary disease and Chlamydia pneumoniae infection.* Am J Respir Crit Care Med. 1999; 160(1) : 349-53.p Abstract: In order to investigate the role of bacteria, including Mycoplasma pneumoniae and especially Chlamydia pneumoniae in acute purulent exacerbations of chronic obstructive pulmonary disease (COPD), we examined sputum specimens and acute and convalescent sera taken 26 d apart from 49 outpatients experiencing an acute purulent exacerbation of

COPD. The sera were tested for antibodies to C. pneumoniae with the microimmunofluorescence test, and for antibodies to M. pneumoniae with the indirect fluorescence antibody test. Routine microbiologic culture of sputum yielded potentially pathogenic microorganisms in 12 of the 49 patients (24%). Three patients (6%) showed serologic evidence of recent M. pneumoniae infection. Seven patients showed high IgG titers of >/= 1:1,024 to C. pneumoniae, and an additional four had a fourfold increase in IgG titer, suggesting reinfection with C. pneumoniae. Sputum from two of these 11 patients also grew Streptococcus pneumoniae, and one grew Moraxella catarrhalis. Patients with and without serologic evidence of current C. pneumoniae infection showed no significant differences in clinical features or pulmonary function. The high incidence of infection with C. pneumoniae (the sole causal agent in 16% of cases, and the causal agent with other agents in 6%) provides insight into the importance of this organism among agents leading to exacerbations of COPD in Turkey.

Mohammed M.J. et al. *Evaluation of the PASCO strep plus broth microdilution antimicrobial susceptibility panels for testing Streptococcus pneumoniae and other Streptococcal species.* J Clin Microbiol. 2000; 38(5) : 1713-6.p Abstract: Antimicrobial resistance continues to increase worldwide among isolates of Streptococcus pneumoniae and other species of streptococci. Increasing rates of penicillin resistance, particularly in viridans group streptococci, and resistance to multiple classes of antimicrobial agents, including beta-lactams, macrolides, and fluoroquinolones, in pneumococci have increased the importance of having accurate antimicrobial susceptibility testing results for guiding therapy. One commercial method of assessing resistance in streptococci is the PASCO Strep Plus panel. This broth microdilution-based method has recently been expanded to include a variety of newer antimicrobial agents. Therefore, we compared the results of the new PASCO Strep Plus panels for 26 antimicrobial agents against the results generated using the National Committee for Clinical Laboratory Standards (NCCLS) broth microdilution reference method for 75 pneumococci and 68 other streptococcal isolates. Only 4 (0.2%) very major errors (all with pneumococci and each with a different antimicrobial agent) were observed. There were 5 (0.3%) major errors observed with pneumococci (each with a different antimicrobial agent), but only 1 major error with nonpneumococcal streptococci. All of the very major and major errors resolved on retesting. Of the 65 (3.9%) and 17 (1.6%) minor errors observed with pneumococci and other streptococci, respectively, all were within 1 dilution of the broth microdilution reference MIC result. Thus, the PASCO Strep Plus panel has comparable accuracy to the NCCLS broth microdilution reference method.

Mohammedi I. et al. *[The good use of antibiotics in intensive care: results of a program for rationalization of prescriptions].* Ann Fr Anesth Reanim. 1998; 17(1) : 27-31.p Abstract: OBJECTIVE: To assess the impact of an antibiotic prescribing programme in a intensive therapy unit. TYPE OF STUDY: Prospective comparative study. METHODS: We compared antibiotic prescriptions and bacterial susceptibility to antimicrobial agents before and after introduction of a programme focusing on injection control and therapeutic indications. RESULTS: The introduction of the programme resulted in a major decrease in antibiotic administration. Moreover, the susceptibility of Pseudomonas aeruginosa to ticarcillin increased from 40 to 68%, and susceptibility of Staphylococcus aureus to methicillin increased from 55 to 73%. CONCLUSIONS: Antibiotic control policies must be considered integral to any effort to decrease resistance and cost of therapy with antibiotics.

Mohn S.C. et al. *Outbreak of ampicillin-resistant Enterococcus faecium—risk factors for faecal colonisation.* APMIS. 2000; 108(4) : 296-302.p Abstract: Since January 1995 there has been a nosocomial outbreak at Haukeland University Hospital involving more than 330 patients with clinical infections caused by ampicillin-resistant Enterococcus faecium (ARE) (minimum inhibitory concentration > or =32 mg/l). Rectal carriage of ARE was initially observed on two medical wards only. Here the ARE colonisation rate has remained high. To assess risk factors for ARE colonisation we performed a case-control study including 37 rectal carriers of ARE and 83 non-carriers on these wards. Significant differences were found between cases and controls with respect to the mean number of days on antimicrobial treatment (13.3 for carriers, 5.5 for non-carriers, p<0.001), mean number of different antibiotics prescribed (2.8 for carriers, 2.1 for non-carriers, p= 0.008) and mean number of days in hospital (18.4 vs 10.2, p=0.001). Unadjusted statistical analysis showed that several antibiotics were risk factors for ARE carriage. Logistic regression analysis showed that fluoroquinolone prescription (OR=3.5, p=0.01) and more than 10 days of antibiotic use (OR= 3.3, p=0.01) were significant risk factors. An additional follow-up screening of previous carriers revealed no colonisation 8 to 36 (median 9) months after discharge from hospital (n=17). Prolonged antimicrobial therapy and broad-spectrum antibiotics seem to facilitate nosocomial ARE colonisation.

Molander A. et al. *The antimicrobial effect of calcium hydroxide in root canals pretreated with 5% iodine potassium iodide.* Endod Dent Traumatol. 1999; 15(5) : 205-9.p Abstract: Calcium hydroxide (CH) is often used as a routine interappointment dressing during the endodontic treatment of teeth with apical periodontitis. However, it fails to consistently produce sterile root canals. The present study was set up to find out whether an antimicrobial strategy including the use of CH could be made more effective if: 1) canals were pretreated with 5% iodine potassium iodide (IPI), and 2) the dressing period was extended up to 2 months. Fifty human teeth, with radiographically verified apical periodontitis, were microbiologically sampled. After chemomechanical preparation the canals were pretreated with IPI for 3-7 days. Teeth where microorganisms persisted were then treated with CH for 2 months. Following instrumentation and dressing with IPI, 43 bacterial strains were recovered in 22 of the teeth. Samples obtained after the CH dressing period disclosed growth of 13 facultative and two strict anaerobic strains in 10 teeth. Enterococcus faecalis was identified in two specimens. In conclusion, the present study gave no evidence for an increased antimicrobial effect of CH if it was left for longer periods in the root canal. Although pretreatment with IPI from a quantitative point of view did not seem to add antimicrobial power, it might reduce the frequency of persisting strains of E. faecalis.

Molchan O.K. et al. *Isolation and initial characterization of the uridine phosphorylase from Salmonella typhimurium.* Biochemistry (Mosc). 1998; 63(2) : 195-9.p Abstract: The structural udp gene encoding uridine phosphorylase (UPase) was cloned from the Salmonella typhimurium chromosome and overexpressed in E. coli cells. The S. typhimurium UPase was purified to an apparently homogeneous state, and some physicochemical characteristics of the enzyme were studied. The molecular weight of one subunit of UPase is 27.5 kD, and the optimal pH for its activity is 7.2—7.4. The native S. typhimurium UPase consists of six identical subunits, and its molecular weight is about 165 kD. According to these parameters, the S. typhimurium UPase is similar to the E. coli UPase. However, these enzymes differ substantially from one another by the substrate sensitivity and sensitivity to polarity of the medium. The S. typhimurium UPase has much higher phosphorylation activity toward thymidine, deoxyuridine, and 5;-bromide- or 5;-fluoride-containing analogs of nucleosides than that of E. coli UPase.

Molgatini S.L. et al. *Oral microbiota and implant type membranes.* J Oral Implantol. 1998; 24(1) : 38-43.p Abstract: Candida albicans (Ca), Staphylococcus aureus (Sa), Streptococcus sanguis (Ss), Actinomyces naeslundii (An), Actinomyces odontolyticus (Ao), Porphyromona spp (P spp), Candida glabrata (Cg), Candida krusei (Ck), and Rhodotorula spp (R spp) were tested with equal pieces of biodegradable membranes. Membranes pretreated with saliva or clorhexidine and nontreated control membranes were tested in three

different culture media containing 0.1 mL homologous suspension for each strain under study. Incubation was performed at 37 degrees C for 48 hours for aerobiosis and for five days for anaerobiosis. Macroscopy and microscopy were carried out. Membranes were removed, washed, and resuspended. Samples were sonicated, and the supernatant was disseminated on brain heart infusion broth or blood agar. Incubation was repeated, colony-forming unit counts were performed, and statistical analysis was carried out using analysis of variance transforming results to Log10 (x + 1), the highest interaction level was used to calculate standard error. Orthogonal contrast was used to compare the different microorganisms under study. Highest adhesion was found with Ca, Cg, Ck, Sa, and Ss. A sufficient quantity of Actinomyces could not be recovered from the membranes. Results with P spp were poor, confirming lower gram-negative adhesion. Replicate flasks with Ss and Ca were cultivated. Membranes were removed after washing and subjected to scanning electron microscopy, as were untreated control pieces. A cavelike surface was observed. Streptococcus sanguis adhering to the membranes showed extracellular projections. Candida and gram-positive cocci showed great recovery capacity.

Molina J. et al. *Campylobacter infections in HIV-infected patients: clinical and bacteriological features.* AIDS. 1995; 9(8) : 881-5.p Abstract: OBJECTIVE: To study the clinical and bacteriological features of Campylobacter infections in HIV-infected patients. DESIGN: A retrospective analysis (1989-1992), followed by a prospective analysis (1992-1994). SETTING: Hospital HIV inpatient unit. PATIENTS AND METHODS: All patients with Campylobacter spp. identified by the laboratory of microbiology at Saint-Louis Hospital, Paris were studied, and their clinical features as well as their response to therapy recorded. RESULTS: During the study period, Campylobacter infection was documented in 38 HIV-infected patients, 76% of whom had AIDS. Campylobacter spp. was isolated from stools in 36 cases and from blood cultures in four cases. Species identification yielded C. jejuni (84%) and C. coli (16%). High-level resistance to quinolones was frequently observed (21%), but resistance to erythromycin (3%) and tetracycline (5%) was rare. Diarrhoea, fever and abdominal pain were the main clinical features of infection. Other intestinal pathogens were found in 42% of patients. Most patients had an acute illness with rapid resolution under appropriate antimicrobial therapy. However, eight patients (21%), experienced chronic diarrhoea with persistent isolation of Campylobacter and in vivo selection of resistant strains, requiring multiple courses of antibiotics. CONCLUSIONS: Campylobacter usually cause acute diarrhoea in patients with HIV infection. Antimicrobial therapy should be guided on in vitro susceptibility testing because of the prevalence of antibiotic resistance. Despite appropriate therapy, some patients will present with prolonged diarrhoea and in vivo selection of multiresistant isolates.

Molinari G. et al. *Bacteria involved in the blockage of biliary stents and their susceptibility to antibacterial agents.* Eur J Clin Microbiol Infect Dis. 1996; 15(1) : 88-92.p Abstract: Endoscopically inserted stents are used for the palliation of obstructive jaundice, but infections and blockage of these stents by biliary sludge and bacterial biofilm may develop, presenting major complications. To analyze which bacteria are involved in this process, 25 biliary stents were examined. Eighty-one microorganisms were isolated: 59 gram-negative bacteria (54 Enterobacteriaceae and 5 Pseudomonas aeruginosa), 19 gram-positive bacteria (all Enterococcus spp.), and 3 Candida albicans. The Enterobacteriaceae were sensitive to netilmicin (100%), imipenem (98%), ciprofloxacin (96%), cefotaxime (69%), and piperacillin (57%), whereas Enterococcus spp. were sensitive to imipenem (79%), piperacillin (75%), ciprofloxacin (63%), and ampicillin (58%). The unpredictable aetiology and high rates of antibiotic resistance suggest that bacteriological monitoring is mandatory to avoid treatment failures in these patients.

Moller B.R. et al. *Sterility of the uterine cavity.* Acta Obstet Gynecol Scand. 1995; 74(3) : 216-9.p Abstract: In a prospective open study the sterility of the uterine cavity was evaluated in 99 women admitted for hysterectomy. The indications for hysterectomy were in most cases persistent irregular vaginal bleeding and fibromyomas of the uterus. Samples for both aerobic and anaerobic bacteria, Chlamydia trachomatis, yeasts and viruses were taken preoperatively from the apex of the vagina and cervical os. Immediately after hysterectomy the uterus was opened under sterile conditions and samples obtained from the isthmus and fundus of the uterine cavity for microbiological examination. Wet smears were taken from the same sites. Nearly a quarter of all the patients harbored one or more microorganisms in the uterus, mostly Gardnerella vaginalis, Enterobacter and Streptococcus agalactiae. We found that in a significant number of cases, the uterine cavity is colonized with potentially pathogenic organisms which may play a causative role in endometritis. The results indicate that inflammation of the uterine cavity should be evaluated by hysteroscopic examination before hysterectomy is undertaken in patients with persistent irregular vaginal bleeding.

Molstad S. et al. *Major change in the use of antibiotics following a national programme: Swedish Strategic Programme for the Rational Use of Antimicrobial Agents and Surveillance of Resistance (STRAMA).* Scand J Infect Dis. 1999; 31(2) : 191-5.p Abstract: In order to reduce inappropriate use of antibiotics and to counteract the increase in antimicrobial resistance in community-acquired and nosocomial infections, a national project was initiated in Sweden in 1994: the Swedish Strategic Programme for the Rational Use of Antimicrobial Agents and Surveillance of Resistance. In the first years the project focused on inappropriate prescribing of antibiotics to children with respiratory tract infections and on the surveillance of resistance in pneumococci. Statistics on antibiotic sales on a national and county level and for different age-groups were studied. Between 1993 and 1997 antibiotic prescribing was reduced by 22%, from 16.3 to 13.0 defined daily doses (DDD) per 1000 inhabitants/d. The reduction was most pronounced for children, 0-6-y-old, from 15.7 to 9.7 DDD/1000 children/d. Macrolides and amoxicillin/co-amoxyclav decreased most. There were large variations in antibiotic sales in different counties, and a decrease was also noted in counties starting from a low level. In the county with the highest sales in 1993, antibiotic prescribing to children was reduced by 40%. The national frequency of penicillin-non-susceptible pneumococci (MIC > or =0.1 mg/l) has not increased during the 1990s and the increasing incidence in southern Sweden seems to have been curtailed. During the period that the project has been running, a major change in the use of antibiotics, especially for pre-school children, has been achieved.

Mombelli G. et al. *Oral vs intravenous ciprofloxacin in the initial empirical management of severe pyelonephritis or complicated urinary tract infections: a prospective randomized clinical trial.* Arch Intern Med. 1999; 159(1) : 53-8.p Abstract: BACKGROUND: There are few data on the efficacy of oral antibiotics in the initial empirical management of severe forms of urinary tract infection (UTI). METHODS: In a multicenter, prospective, randomized trial we compared oral (500 mg twice daily) vs intravenous ciprofloxacin (200 mg twice daily) in the initial empirical management of hospitalized patients with serious forms of UTI. Exclusion criteria were severe sepsis, inability to take oral medication, or the presence of obstruction or renal foci of suppuration. The study population included 66 women with pyelonephritis, 43 patients with community-acquired UTIs, and 32 patients with hospital-acquired UTIs. The frequency of bacteremia was 28 (42%) of 66 in the patients with pyelonephritis and 25 (33%) of 75 in those with complicated UTIs. Seventy-two patients were randomized to treatment with oral and 69 to intravenous ciprofloxacin. RESULTS: There were no infection-related deaths and no patients required an early change of antibiotics because of worsening clinical status during the initial empirical phase of treatment. The mean duration of fever was 1.7 days in patients treated by the oral vs 1.9 days in patients treated by the intravenous route (P =.15). The rates of microbiological failure (3% in the oral vs 2% in the intravenous

treatment group) and of unsatisfactory clinical response (4% oral vs 3% intravenous) were low. A treatment change was eventually required in 14% of the patients assigned to the oral and 7% of the patients assigned to the intravenous regimen, mainly because of the isolation of enterococci or ciprofloxacin-resistant organisms in pretherapy urine specimens. CONCLUSIONS: In the hospital setting, oral ciprofloxacin is as effective as the intravenous regimen in the initial empirical management of serious UTIs, including bacteremic forms, in patients without severe sepsis, obstruction, or renal foci of suppuration. The efficacy of the oral regimen indicates a potential use for ciprofloxacin in outpatient treatment of a subset of patients currently hospitalized on account of disease severity.

Monnet D.L. *Methicillin-resistant Staphylococcus aureus and its relationship to antimicrobial use: possible implications for control*. Infect Control Hosp Epidemiol. 1998; 19(8) : 552-9.p Abstract: The control of methicillin-resistant Staphylococcus aureus (MRSA) is still an unresolved issue in numerous healthcare institutions worldwide. Guidelines for the control of MRSA in hospitals focus on measures to control cross-transmission and prevent colonization, but rarely specifically mention the control of antimicrobial use. We reviewed the different types of evidence for a causal relationship between MRSA and antimicrobial use by classifying them in four categories: consistent associations, dose-effect relationships, concomitant variations, and arguments to support a plausible biological model to explain this relationship. Although the relative participation of cross-transmission and antimicrobial selection pressure in the level of MRSA observed in a healthcare setting remains to be determined, we found lines of evidence to support the existence of a relationship between MRSA and antimicrobial use in each of the four categories. This review points out the relative lack of studies specifically designed to investigate this aspect of MRSA epidemiology and the need to implement such studies quickly. In the meantime, the results presented here should encourage the implementation of antimicrobial-use improvement programs in hospitals in addition to existing infection control measures, which are still a priority in countries with high MRSA prevalence.

Monnet D.L. *Toward multinational antimicrobial resistance surveillance systems in Europe*. Int J Antimicrob Agents. 2000; 15(2) : 91-101.p Abstract: While there is a growing concern about increasing antimicrobial resistance and international spread of resistant microorganisms, we are still lacking timely multinational, good-quality susceptibility data to guide our decisions on controlling such resistance. This review describes and compares current sources of multicentric antimicrobial susceptibility data, identifies problems responsible for the postponing of the implementation of epidemiological antimicrobial resistance surveillance systems and finally presents requirements for such systems.

Monnet D.L. et al. *Evidence of interhospital transmission of extended-spectrum beta-lactam-resistant Klebsiella pneumoniae in the United States, 1986 to 1993. The National Nosocomial Infections Surveillance System*. Infect Control Hosp Epidemiol. 1997; 18(7) : 492-8.p Abstract: BACKGROUND: In addition to single-hospital outbreaks, interhospital transmission of extended-spectrum beta-lactam-resistant (ESBLR) Klebsiella pneumoniae has been suspected in some reports. However, these studies lacked sufficient epidemiological information to confirm such an occurrence. METHODS: We reviewed the surveillance data reported to the National Nosocomial Infections Surveillance (NNIS) System during 1986 to 1993 for K pneumoniae isolates and their susceptibility to either ceftazidime, cefotaxime, ceftriaxone, or aztreonam. Pulsed-field gel electrophoresis (PFGE) was used to study available ESBLR K pneumoniae isolates. RESULTS: Among 8,319 K pneumoniae isolates associated with nosocomial infections, 727 (8.7%) were resistant or had intermediate-level resistance to at least one of these antibiotics. One hospital (hospital A) accounted for 321 isolates (44.2%) of ESBLR K pneumoniae. During 1986 to 1993, the percentage of K pneumoniae isolates that were ESBLR increased from 0 to 57.7% in hospital A, from 0 to 35.6% in NNIS hospitals 0 to 20 miles from hospital A (area B), and from 1.6 to 7.3% in NNIS hospitals more than 20 miles from hospital A, including hospitals located throughout the United States. Analysis of PFGE restriction profiles showed a genetic relationship between a cluster of isolates from hospital A and some isolates from one hospital in area B, and consecutive admission in these two hospitals was confirmed for two patients from whom isolates were available. CONCLUSIONS: These data provide evidence of interhospital transmission of ESBLR K pneumoniae in one region of the United States and stress the interrelationship between hospitals when trying to control antimicrobial resistance.

Monsen T. et al. *Clonal spread of staphylococci among patients with peritonitis associated with continuous ambulatory peritoneal dialysis.* Kidney Int. 2000; 57(2) : 613-8.p Abstract: BACKGROUND: Peritonitis is the most important complication of continuous ambulatory peritoneal dialysis (CAPD). Coagulase-negative staphylococci (CNS) are the most common causes of peritonitis, only limited information is available regarding the distribution and epidemiology of different CNS species associated with CAPD peritonitis. METHODS: CNS isolated from dialysis effluent from CAPD patients with peritonitis was identified by species and further analyzed with pulsed-field gel electrophoresis (PFGE). RESULTS: A total of 216 microorganisms (206 bacteria and 10 Candida species) were isolated from 196 consecutive culture-positive CAPD samples obtained from 75 patients. One hundred and twenty-one (56%) isolates represented staphylococci. The four most frequently isolated staphylococcal species were Staphylococcus epidermidis (70 isolates), Staphylococcus aureus (31 isolates), Staphylococcus hemolyticus (10 isolates), and Staphylococcus hominis (4 isolates). PFGE analysis revealed the clonal spread among patients of three different clones of S. epidermidis and one clone of S. aureus among the investigated patients. Indistinguishable isolates of either S. epidermidis, S. hominis, or S. aureus were also isolated in repeated samples from several patients. CONCLUSION: PFGE is a useful method for the epidemiological evaluation of staphylococci-associated CAPD infections and should replace older and less accurate methods, such as antibiotic sensitivity patterns. We recommend that CNS isolates from patients with CAPD-associated peritonitis should be saved for future investigations and typing, which would aid in the management of this patient category.

Monsen T. et al. *Antibiotic susceptibility of staphylococci isolated in blood cultures in relation to antibiotic consumption in hospital wards.* Scand J Infect Dis. 1999; 31(4) : 399-404.p Abstract: A total of 510 isolates of Micrococcaceae, 500 of staphylococci and 10 micrococci, detected in 485 (3.3%) of 14,860 consecutive blood cultures obtained from patients at a Swedish university hospital and 2 local hospitals were identified to species level and investigated for antibiotic susceptibility. The 5 most frequently isolated species were Staphylococcus epidermidis (54.8%), S. aureus (28.0%), S. hominis (3.4%), S. warneri (3.2%) and S. haemolyticus (2.8%). All isolates of S. aureus were oxacillin sensitive. Great diversity in antibiotic resistance among coagulase negative staphylococci between hospitals and different ward units in the university hospital was observed. The frequency of antimicrobial resistance among S. epidermidis correlated with the antibiotic consumption at different ward units, in particular for ciprofloxacin ($p < 0.001$) and co-trimoxazole ($p < 0.004$). The study emphasizes the importance of monitoring antibiotic consumption and resistance patterns of nosocomial staphylococci in order to avoid emergence and spread of multi-resistant bacteria within the hospital environment.

Montane B.S. et al. *Fungal peritonitis in pediatric patients.* Adv Perit Dial. 1998; 14 : 251-4.p Abstract: Fungal peritonitis (FP) is a rare complication of peritoneal dialysis (PD). Although treatment with fluconazole (FCZ) has improved catheter survival and preservation of the peritoneal membrane, FP still carries a high morbidity and mor-

tality in pediatrics. High-risk factors for FP include previous usage of systemic antibiotics and recurrent bacterial peritonitis. A prospective experience in the treatment of FP was conducted at the University of Miami/Jackson Children's Hospital from 1992 to 1997. All patients received either oral or intravenous loading dose of FCZ (5-7 mg/kg) followed by intraperitoneal (i.p.) FCZ (75 mg/L). Amphotericin B (amp B) was added when clinical sepsis was present. A total of 6 patients had FP (all Candida sp.; mean age: 6 years). Two of these patients were neonates with Tenckhoff-catheter placement at less than 1 week of age. Five patients achieved sterilization of the peritoneal fluid. One patient required catheter removal (C. tropicalis). The 2 neonates were infection free for 29 and 41 days, respectively, but both died of superimposed bacterial sepsis. The remaining 4 patients survived and completed 6 weeks of FCZ treatment. Two have had preservation of the peritoneal membrane for more than 1 year. The other 2 were switched to hemodialysis. We conclude that FCZ is an effective treatment for fungal peritonitis in pediatric patients. Adjunct therapy with amp B is usually necessary if sepsis is present. Although eradication of the fungus is possible in a majority of cases, neonates and immunocompromised hosts remain at high risk for morbidity and mortality.

Montay V. et al. *[Evaluation of prescription of antibiotics in an intensive care unit].* Presse Med. 1998; 27(15) : 700-4.p Abstract: OBJECTIVES: In order to optimize prescriptions, we conducted a qualitative evaluation of antibiotic prescription in an intensive care unit. METHODS: A prospective observational study was performed on 100 consecutive prescriptions from 11/95 to 4/96. RESULTS: Among 14 documented cases, initial antibiotic therapy was in accordance with antimicrobial susceptibility patterns in all but one case. Among 86 empirical cases, 38 were secondarily documented, yielding 43 microorganisms. Of these 38, 27 were susceptible to 2 or more empirical antibiotics, 3 to only 1 and 8 to none. Antibiotics were modified in 23/38 (60%) cases, resulting in drug changes (n = 21) or drug addition (n = 2). In all cases, the new prescription was consistent with the antibiogram. In the 48 cases where no microorganism was isolated, antibiotic change was guided by clinical course and occurred in 6 (12.5%) cases. A switch to older, cheaper or more narrow spectrum antibiotics was possible in 18 cases, but was actually done in only 4 (22%). Dosage errors were observed in 5 cases of initial therapy. Second line therapy contained 8(21%) dosage errors. Most frequently, isolated organisms at admission were: Staphylococcus sp. (n = 15), P. aeruginosa (n = 11) and S. pneumoniae (n = 10). New pathogens emerged in 16 patients (16%) receiving antibiotics. The most frequent was P. aeruginosa in 4 patients receiving ofloxacin + amoxicillin +/- clavulanic acid. CONCLUSION: These results are encouraging, however, the use of guidelines and periodic evaluation of antibiotic prescription practices might improve the efficiency of empirical antibiotic prescriptions and reduce overall antibiotic costs.

Monte Secades R. et al. *[Clinical profile and prognosis of bacteremia in patients with cirrhosis based on the Child-Pugh classification].* Rev Clin Esp. 1999; 199(11) : 716-21.p Abstract: The characteristics of 70 cases of bacteremia in cirrhotic patients were studied according to the Child-Pugh classification as severity marker of liver involvement. Factors influencing on prognosis were determined. For a comparative analysis, 1,006 cases of bacteremia in non-cirrhotic patients were included. Sixteen patients corresponded to group A, 23 to group B and 31 to group C in the Child-Pugh classification. Patients in group A had a predominance of extra-enteric microorganisms, mainly Staphylococcus aureus (37.5%; p = 0.02), well-defined source (urinary tract, respiratory tract, skin) and good prognosis (mortality rate 6.2%). In contrast, patients in group C had a high recovery rate of Escherichia coli (41.9%) and pneumococcus (19.3%), undetermined source (51.6%; p = 0.05), ascites (83.9%), with or without concomitant peritonitis (41.1%; p = 0.03) and poor prognosis (mortality rate 48.3%; p = 0.008). The characteristics of patients in group B were similar to those of patients in group C but prognosis was as in patients in group A. The immediate mortality rate in the studied patients was 26%. The parameter which best predicted survival in the multivariate analysis was the Child-Pugh classification.

Montecalvo M.A. et al. *Infection-control measures reduce transmission of vancomycin-resistant enterococci in an endemic setting.* Ann Intern Med. 1999; 131(4) : 269-72.p Abstract: BACKGROUND: Vancomycin-resistant enterococci (VRE) are nosocomial pathogens in many U. S. hospitals. OBJECTIVE: To determine whether enhanced infection-control strategies reduce transmission of VRE in an endemic setting. DESIGN: Prospective cohort study. SETTING: Adult oncology inpatient unit. PATIENTS: 259 patients evaluated during use of enhanced infection-control strategies and 184 patients evaluated during use of standard infection-control practices. INTERVENTIONS: Patient surveillance cultures were taken, patients were assigned to geographic cohorts, nurses were assigned to patient cohorts, gowns and gloves were worn on room entry, compliance with infection-control procedures was monitored, patients were educated about VRE transmission, patients taking antimicrobial agents were evaluated by an infectious disease specialist, and environmental surveillance was performed. MEASUREMENTS: VRE infection rates, VRE colonization rates, and changes in antimicrobial use. RESULTS: During use of enhanced infection-control strategies, incidence of VRE bloodstream infections decreased significantly (0.45 patients per 1000 patient-days compared with 2.1 patients per 1000 patient-days; relative rate ratio, 0.22 [95% CI, 0.05 to 0.92]; P = 0.04), as did VRE colonization (10.3 patients per 1000 patient-days compared with 20.7 patients per 1000 patient-days; relative rate ratio, 0.5 [CI, 0.33 to 0.75]; P < 0.001). Use of all antimicrobial agents except clindamycin and amikacin was significantly reduced. CONCLUSION: Enhanced infection-control strategies reduced VRE transmission in an oncology unit in which VRE were endemic.

Montelli A.C. et al. *Estudo sobre a resistência aos antimicrobianos em bactérias isoladas de pacientes hospitalizados (Botucatu, 1988-1992).* Folha méd. 1996; 113(1) : 91-7.p Abstract: A resistência de bactérias isoladas de pacientes hospitalizados varia segundo o local e a poca. Objetivamos neste estudo estabelecer os padräes de sensibilidade a droga antimicrobianas de 1.200 amostras isoladas de material clínico de pacientes hospitalizados sendo 300 de cada espécie prevalente nas infecções hospitalares do HC da Faculdade de Medicina de Botucatu, de 1988 a 1992: E. coli, Klebsiella pneumoniae, Pseudomonas aeruginosa e S. aureus. Pesquisamos a CIM das bactérias a 13 drogas antimicrobianas: aztreonam (Az), amicacina (Ap), cafalotina (Cf), cefoxitina (Cx), ceftriaxone (Ct), cefatzidima (Cz), gentamicina (G), pefloxacina (Pf), ciprofloxacina (Ci), imipenem + cilastatina (IM), oxacilina (Ox) e vancomicina (V) - pelo método da diluição da droga (de 0,05 a 256 mcg/ml) em meio de cultura sólido (Mueller-Hinton). Estabelecemos os índices: Cl a cinquenta por cento, Cl a setenta e cinco por cento, Cl a noventa por cento, faixa de variação das CIM e porcentagem de amostras resistentes (critério do NCCLS) para cada espécie e antimicrobiano. Concluímos que foram drogas mais ativas (em termos de Cl noventa por cento): E. coli - Az 0,1), Pf (0,1), Ct (0,05) e Cz (0,25); K. pneumoniae - Az (0,25), Ct (0,25), Cz (0,5) e Pf (2,0): P. aeruginosa - Im (4,0); Az (16); Cz (16); Ci (16); S. aureus - V (1,0, Ci (8,0), Am (128) e Cf (128 mcg/ml). A melhor atividade antibacteriana observada "in vitro" foi relacionada as seguintes drogas: aztreonam (77-100 por cento de amostras sensíveis), pefloxacina (73-99, 7 por cento), ceftazidima (50-99, 7 por cento), ciprofloxacina (80 por cento), imipenem (93 por cento) e vancomicina (100 por cento) (AU).

Montelli A.C. et al. Folha méd. 1996; 113(1) : 91-7.p Abstract: A resistência de bactérias isoladas de pacientes hospitalizados varia segundo o local e a época. Objetivamos neste estudo estabelecer os padräes de sensibilidade a droga antimicrobianas de 1.200 amostras isoladas de material clínico de pacientes hospitalizados sendo 300 de cada espécie prevalente nas infecções hospitalares do HC da

Faculdade de Medicina de Botucatu, de 1988 a 1992: E. coli, Klebsiella pneumoniae, Pseudomonas aeruginosa e S. aureus. Pesquisamos a CIM das bactérias a 13 drogas antimicrobianas: aztreonam (Az), amicacina (Ap), cafalotina (Cf), cefoxitina (Cx), ceftriaxone (Ct), cefatzidima (Cz), gentamicina (G), pefloxacina (Pf), ciprofloxacina (Ci), imipenem + cilastatina (IM), oxacilina (Ox) e vancomicina (V) - pelo método da diluição da droga (de 0,05 a 256 mcg/ml) em meio de cultura sólido (Mueller-Hinton). Estabelecemos os índices: Cl a cinquenta por cento, Cl a setenta e cinco por cento, Cl a noventa por cento, faixa de variação das CIM e porcentagem de amostras resistentes (critério do NCCLS) para cada espécie e antimicrobiano. Concluímos que foram drogas mais ativas (em termos de Cl noventa por cento): E. coli - Az 0,1), Pf (0,1), Ct (0,05) e Cz (0,25); K. pneumoniae - Az (0,25), Ct (0,25), Cz (0,5) e Pf (2,0): P. aeruginosa - Im (4,0); Az (16); Cz (16); Ci (16); S. aureus - V (1,0, Ci (8,0), Am (128) e Cf (128 mcg/ml). A melhor atividade antibacteriana observada "in vitro" foi relacionada as seguintes drogas: aztreonam (77-100 por cento de amostras sensíveis), pefloxacina (73-99, 7 por cento), ceftazidima (50-99, 7 por cento), ciprofloxacina (80 por cento), imipenem (93 por cento) e vancomicina (100 por cento) (AU).

Montenegro J. et al. *Exit-site care with ciprofloxacin otologic solution prevents polyurethane catheter infection in peritoneal dialysis patients.* Perit Dial Int. 2000; 20(2) : 209-14.p Abstract: OBJECTIVE: Mupirocin ointment and antiseptics are standard cleansing agents in routine exit-site care of peritoneal dialysis (PD) catheters, but these agents have a deleterious effect on polyurethane devices. We assessed the effectiveness of topical use of ciprofloxacin otologic solution for preventing exit-site infection (ESI) in PD patients with polyurethane catheters. DESIGN: Prospective study. SETTING: Service of Nephrology of an acute-care teaching hospital in Galdacano, Bizkaia, Spain. PATIENTS: A total of 164 patients with polyurethane catheters inserted was studied from start of continuous ambulatory PD to the end of a 24-month period. Patients were divided into two groups according to exit-site treatment protocols. INTERVENTION: Patients in group 1 (n = 86) were instructed on daily exit-site care with soap and water only; whereas patients in group 2 (n = 78) cleansed with soap and water, followed by application of a single-dose vial of 0.5 mL ciprofloxacin (1 mg) for application around the insertion site. MAIN OUTCOME MEASURES: Episodes of ESI and peritonitis. RESULTS: There were 67 episodes of ESI among patients in group 1 versus 9 episodes among patients in group 2 ($p < 0.05$), resulting in a rate of 0.41 and 0.06 episodes per patient-year of exposure, respectively ($p < 0.001$). Staphylococcus aureus ESI rate was 0.34 in group 1 versus 0.06 in group 2 ($p = 0.001$). Infections caused by Pseudomonas aeruginosa and other pathogens occurred in 11 patients in group 1 and in no patients in group 2 ($p = 0.05$). Peritonitis due to S. aureus ESI was significantly less frequent among patients treated with ciprofloxacin (1 vs 9 cases, $p = 0.001$). Removal of the catheter was necessary in 5 patients in group 1 and in no patients in group 2 ($p < 0.05$). CONCLUSION: Daily application of ciprofloxacin otologic solution at the exit site of PD patients with polyurethane catheters inserted significantly reduces the rate of ESI caused by S. aureus and other organisms, particularly P. aeruginosa.

Monterisi A. et al. *[Native-valve endocarditis produced by Lactobacillus casei sub. rhamnosus refractory to antimicrobial therapy].* Medicina (B Aires). 1996; 56(3) : 284-6.p Abstract: Lactobacillus endocarditis is a rare infection. In fact, only 42 cases have been described in the literature from 1938 up to date. In only 17 previously reported cases have patients been cured with medical therapy alone. Although infections produced by Lactobacillus spp, have been described in our country, none of them included endocarditis. We report herein a case of endocarditis due to a vancomycin-resistant strain of Lactobacillus casei sub. rhamnosus in a 29-year-old man with prolapse of the mitral valve. He required surgical replacement of his valve because of the poor response to antimicrobial therapy with penicillin and gentamicin. The patient displayed a successful clinical outcome, with no evidence of recurrence along the subsequent 2 years. We point out the need to accurately identify Lactobacillus spp. in isolates from blood cultures of patients with endocarditis, since these bacteria may often be mistaken for other species more frequently associated to this infection, which usually respond to conventional antimicrobial therapy. Furthermore, we suggest that early surgical replacement should be considered when lactobacillus endocarditis is diagnosed.

Monterrubio Villar J. et al. *[ST elevation and tension pneumothorax].* Rev Esp Cardiol. 2000; 53(3) : 467-70.p Abstract: We present a case of a sixty-nine-year-old male admitted to the hospital because of an acute respiratory failure that needed intubation and mechanical ventilation. Shortly after several attempts of right and left (the last one successful) subclavian vein cannulation (the last one successful) he developed a bilateral tension pneumothorax with important hemodynamic repercussion, a critical hypoxia and an ST elevation in inferior leads. Other more typical electrocardiographic changes could be observed: decrease in QRS amplitude and diminishing of precordial R voltage. After removing the air of the right pleural space, all the electrocardiographic signs disappeared returning to normal without electric or enzymatic assay of myocardial necrosis.

Montuclard B. et al. *[Does asymptomatic amniotic infection in the second trimester really exist?].* J Gynecol Obstet Biol Reprod (Paris). 1996; 25(2) : 186-91.p Abstract: OBJECTIVE. Our purpose was to evaluate the incidence of asymptomatic amniotic fluid infection. STUDY DESIGN. One hundred fifty-four amniotic fluid samples obtained at the second trimester between 14 and 27 weeks gestation were studied by Gram stain with bacteriological cultures and detection of mycoplasm species and Chlamydiae trachomatis. Transabdominal amniocentesis for caryotyping were carried out in 151 health patients with intact membranes and without preterm labor or signs of infectious (3 dizygotic twin pregnancies). RESULTS. One hundred forty-seven complete microbiologic examinations were performed (Gram stain examination white-cell count, quantitative aerobic and anaerobic cultures). Commercial texts for Mycoplasma hominis, Ureaplasma urealyticum and Chlamydiae trachomatis were negative. Three patients had rare microorganisms, coagulase negative staphylococcus (30 and 50 bacteria per ml) and alpha-hemolytic streptococcus (5 x 10(2) bacteria per ml). White cell count on amniotic fluids in 50 cases (32%) was less than 30 per ml. CONCLUSION. These findings appear to be in contradiction with recent data, suggesting the existence of intraamniotic infection in the early phase of the second trimester. Our data confirm the need for a cut-off level for white cell count to improve test sensibility.

Moolenaar R.L. et al. *A prolonged outbreak of Pseudomonas aeruginosa in a neonatal intensive care unit: did staff fingernails play a role in disease transmission?* Infect Control Hosp Epidemiol. 2000; 21(2) : 80-5.p Abstract: OBJECTIVES: To describe an outbreak of Pseudomonas aeruginosa bloodstream infection (BSI) and endotracheal tube (ETT) colonization in a neonatal intensive care unit (NICU), determine risk factors for infection, and make preventive recommendations. DESIGN: A 15-month cohort study followed by a case-control study with an environmental survey and molecular typing of available isolates using pulsed-field gel electrophoresis. SETTING AND PATIENTS: Neonates in the NICU of a university-affiliated children's hospital. INTERVENTIONS: Improved hand washing and restriction of use of long or artificial fingernails. RESULTS: Of 439 neonates admitted during the study period, 46 (10.5%) acquired P aeruginosa; 16 (35%) of those died. Fifteen (75%) of 20 patients for whom isolates were genotyped had genotype A, and 3 (15%) had genotype B. Of 104 healthcare workers (HCWs) from whom hand cultures were obtained, P aeruginosa was isolated from three nurses. Cultures from nurses A-1 and A-2 grew genotype A, and cultures from nurse B grew genotype B. Nurse A-1 had long natural fingernails, nurse B had long artificial fingernails, and nurse A-2 had short natural fingernails. On multivariate logistic regression analysis, expo-

sure to nurse A-1 and exposure to nurse B were each independently associated with acquiring a BSI or ETT colonization with P aeruginosa, but other variables, including exposure to nurse A-2, were not. CONCLUSION: Epidemiological evidence demonstrated an association between acquiring P aeruginosa and exposure to two nurses. Genetic and environmental evidence supported that association and suggested, but did not prove, a possible role for long or artificial fingernails in the colonization of HCWs' hands with P aeruginosa. Requiring short natural fingernails in NICUs is a reasonable policy that might reduce the incidence of hospital-acquired infections.

Moore D.F. et al. *Amplification of rRNA for assessment of treatment response of pulmonary tuberculosis patients during antimicrobial therapy.* J Clin Microbiol. 1996; 34(7) : 1745-9.p Abstract: The time course of persistence of Mycobacterium tuberculosis as measured by detection of rRNA, acid-fast bacillus (AFB) smear, and culture was determined for pulmonary tuberculosis patients during antimicrobial therapy. Twenty-three patients who were initially AFB smear positive and who subsequently completed a course of antimicrobial therapy were selected for the study. Sequential specimens were tested by AFB smear, culture, and rRNA amplification (Gen-Probe Amplified Mycobacterium Tuberculosis Direct Test [MTD]). The initial diagnostic specimens of all patients were positive by culture; those of 22 patients (96%) also were positive by MTD. Overall, MTD results remained positive longer than both smear and culture results. The median times to the last positive test result were 9 days for AFB smear, 26 days for culture, and 30 days for MTD. The last positive test result was the AFB smear result in 4% of cases, the culture result in 22%, and the MTD result in 52%. Fifty-six percent of patients had a period of shedding of noncultivable M. tuberculosis which was detected by MTD after culture results had converted to negative. This noncultivable period lasted 7 to 245 days. All three tests became reproducibly negative before the end of therapy and remained negative during follow-up for up to 1 year. These results indicate that during successful antimicrobial therapy, M. tuberculosis is eliminated in sputum samples as measured by amplification of rRNA, as well as by AFB smear and culture. No long-term rRNA carrier state was detected. While the time course of clearance of M. tuberculosis measured by rRNA overall was longer than with the two traditional tests, the rRNA test results allow sensitive and precise measurement of the clearance of noncultivable M. tuberculosis from respiratory specimens. This attribute may allow rRNA testing to be useful in clarifying patient response to antimicrobial therapy.

Moore K.H. et al. *The relative incidence of detrusor instability and bacterial cystitis detected on the urodynamic-test day.* BJU Int. 2000; 85(7) : 786-92.p Abstract: OBJECTIVE: To determine whether patients with detrusor instability (DI) were more likely to have bacterial cystitis or significant bacteriuria on the urodynamic-test day than were women with a stable bladder. PATIENTS AND METHODS: A catheter specimen of urine was cultured (overnight in air) from 862 consecutive women at the time of urodynamic testing. The upper urinary tract was imaged, with cystoscopy when indicated, to exclude upper tract lesions or malignancy. The percentage of patients with pure idiopathic DI and those with mixed DI/genuine stress incontinence (GSI), in whom the urine culture was positive, was compared with the percentage who had a stable bladder (pure GSI or urodynamically normal) and a positive urine culture, both for the entire dataset and for women aged > or <65 years. Data were also analysed to detect the converse relationship; in those women found to have bacterial cystitis, the relative risk of being found urodynamically unstable or stable was determined. RESULTS: The likelihood of bacterial cystitis occurring in patients with idiopathic DI (5.6%) was significantly greater than that in patients with GSI (1.1%; P = 0.009, Fisher's exact test). The proportion of patients with DI and significant bacteriuria (15. 4%) was significantly greater than that in patients with GSI (7.9%; P = 0.02). In patients with combined pure and mixed DI, bacterial cystitis was significantly more likely to occur (6.3%) than in GSI (P < 0.001), but bacteriuria was no more likely (12.5%, P = 0.09). Conversely, of those women found to have bacterial cystitis, the relative risk of having an unstable bladder was increased (+1.56), but for those with bacteriuria the relative risk of detrusor instability was not increased. CONCLUSION: There was a significant association between idiopathic DI and bacterial cystitis, and we suggest that in some women with an unstable bladder, urinary infection may enhance detrusor contractility. Nevertheless, large-scale studies are needed of the temporal relationship between the onset of bacterial cystitis and the onset of DI.

Mor C. et al. *Bacterial adherence to bleached surfaces of composite resin in vitro.* Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 1998; 86(5) : 582-6.p Abstract: OBJECTIVE: The effect of bleaching agents on bacterial adherence to polished surfaces of composite resin restorations was assessed in vitro. STUDY DESIGN: Samples of light-curing composite resins were treated with either 10% carbamide peroxide or 10% hydrogen peroxide for 1, 3, or 7 days. Bacterial adherence of Streptococcus mutans, Streptococcus sobrinus, and Actinomyces viscosus to the treated resin samples was analyzed and compared with adherence to nonbleached controls. RESULTS: A 10% solution of carbamide peroxide caused a significant increase in surface adherence of Streptococcus mutans and Streptococcus sobrinus after 3 days (P <.01). A 10% solution of hydrogen peroxide caused a significant increase in surface adherence of Streptococcus mutans and Streptococcus sobrinus after 3 and 7 days (P <.01). A decrease in adherence of Actinomyces viscosus was found after treatment with 10% hydrogen peroxide for 7 days (P <.05). CONCLUSIONS: It appears that bleaching agents may affect adherence of certain cariogenic microorganisms to the outer surfaces of composite resin restorations.

Mora J.S. et al. *Risk of microbial contamination with multiple use of 5-fluorouracil vials.* J Glaucoma. 1996; 5(6) : 371-4.p Abstract: PURPOSE: To determine whether microorganisms are able to survive in a solution of 50 mg/ml of 5-fluorouracil (5-FU) and, therefore, whether there is a risk of vial contamination with multiple use. METHODS: Ten common nosocomial pathogens were tested. Minimal inhibitory concentrations (MICs) of 5-FU were determined for each organism. Organisms were then inoculated into 1 ml of 5-FU (50 mg/ml) and, after timed periods of exposure, were plated onto blood agar and incubated at 37 degrees C. Plates were checked daily for the presence or absence of growth. RESULTS: The MICs of Klebsiella pneumoniae and Pseudomonas cepacia were within one log unit of the 10 mg/ml concentration of 5-FU used by some clinics. After incubation in 5-FU for 1 h, all species survived; after 24 h of exposure, five of the 10 species-Staphylococcus aureus, Staphylococcus epidermidis, Enterococcus faecalis, K. pneumoniae, and Proteus mirabilis-were still viable. CONCLUSION: 5-FU has limited bactericidal activity, and there is a risk of contamination if 5-FU vials are used in multiple dose fashion.

Moran J.S. et al. *Drugs of choice for the treatment of uncomplicated gonococcal infections.* Clin Infect Dis. 1995; 20 Suppl 1 : S47-65.p Abstract: Resistance of Neisseria gonorrhoeae to antimicrobial agents continues to spread and intensify. Choosing an antimicrobial regimen requires knowledge of the comparative efficacy of candidate regimens, as delineated in properly conducted clinical trials; their activity against N. gonorrhoeae in vitro; and their pharmacokinetics and toxicity. We tabulated the results of trials of single-dose antimicrobial therapy for uncomplicated gonococcal infection published after 1980. Thirty regimens comprising 21 antimicrobial drugs have been shown to be highly effective for rectal and urogenital infections; the agents involved are cefixime, cefodizime, cefotaxime, cefoxitin, ceftizoxime, ceftriaxone, cefuroxime, cefuroxime axetil, ciprofloxacin, fleroxacin, norfloxacin, ofloxacin, pefloxacin, temafloxacin, azithromycin, aztreonam, netilmicin, rifampin plus erythromycin stearate, sisomicin, and spectinomycin. Few regimens have been shown to be highly effective against pharyngeal infections. Among

those antimicrobial agents available for the treatment of uncomplicated gonococcal infections in the United States, ceftriaxone (125 mg), cefixime (400 mg), ciprofloxacin (500 mg), and ofloxacin (400 mg) appear to offer the best balance of proven efficacy and safety.

Morar P. et al. *Topical antibiotics on tracheostoma prevents exogenous colonization and infection of lower airways in children*. Chest. 2000; 117(2) : 513-8.p Abstract: INTRODUCTION: Patients requiring long-term ventilation are at high risk of lower airway infections, generally of endogenous development. Patients on long-term ventilation, in particular via a tracheostomy, may develop tracheobronchitis or pneumonia of exogenous pathogenesis, ie, caused by microorganisms not carried in the oropharynx. The frequency of exogenous colonization or infection has previously been reported to be as high as 33%. A prospective observational cohort study of 2 years was undertaken to evaluate the efficacy of topical antibiotics in the prevention of exogenous colonization or infection of the lower airways. The antibiotic combination of polymyxin E and tobramycin in a 2% paste was applied four times a day on the tracheostoma. Materials and methods: A total of 23 children (median age, 4.1 months; range, 0 to 215 months) were enrolled in the study from September 1, 1996, until August 30, 1998. Surveillance samples of the oropharynx were obtained before tracheostomy and thereafter twice weekly. Diagnostic samples of the lower airways were taken once weekly and on clinical indication. RESULTS: Fourteen children (61%) had a total of 16 episodes of tracheal colonization or infection with 20 potentially pathogenic microorganisms. Only one child had tracheobronchitis with Streptococcus pneumoniae and Haemophilus influenzae during the 2-year study. Of the 16 colonization episodes, 12 (75%) were of primary endogenous pathogenesis, ie, caused by microorganisms present in the oropharynx at the time of tracheostomy. Community microorganisms including S pneumoniae, H influenzae, Moraxella (Branhamella) catarrhalis, and Staphylococcus aureus were the predominating bacteria. Three patients acquired nosocomial bacteria Pseudomonas aeruginosa and Hafnia alvei in the oropharynx, subsequently followed by secondary colonization of the lower airways. There was one failure of the prophylaxis: one patient (4%) had exogenous colonization with Pseudomonas pickettii. CONCLUSION: Topical antibiotics applied to the tracheostoma were found to be effective in reducing the exogenous route of colonization of the lower respiratory tract, compared with clinical experience and the literature. This promising technique requires further evaluation in randomized trials.

Morar P. et al. *Impact of tracheotomy on colonization and infection of lower airways in children requiring long-term ventilation: a prospective observational cohort study*. Chest. 1998; 113(1) : 77-85.p Abstract: STUDY OBJECTIVES: Determination of the following: (1) colonization and infection rates in children requiring long-term ventilation initially via a transtracheal tube and subsequently via a tracheotomy; (2) the number of infection episodes per 1,000 ventilation days, during both types of artificial airways; and (3) routes of colonization/infection of the lower airways, ie, whether the pathogenesis was endogenous (via the oropharynx) or exogenous (via the transtracheal tube or tracheotomy). DESIGN: Observational, cohort, prospective study over 2 1/2 years. SETTING: Pediatric ICU (PICU), Royal Liverpool Children's National Health Service Trust of Alder Hey, a tertiary referral center. PATIENTS: Twenty-two children requiring long-term mechanical ventilation initially transtracheally and subsequently via a tracheotomy. INTERVENTION: Nil. RESULTS: The lower airways were colonized in 71% of children during transtracheal ventilation; posttracheotomy, this was 95% (p=0.03). Children developed significantly fewer infections following colonization with a microorganism posttracheotomy (8/15 pretracheotomy vs 6/21 posttracheotomy; p=0.013). Throughout the study, there were a total of 17 episodes of infection, all of which were preceded by colonization. Haemophilus influenzae, Staphylococcus aureus, Acinetobacter baumannii, and Pseudomonas aeruginosa were the same four causative pathogens during mechanical ventilation both transtracheally and via tracheotomy. Forty-nine episodes of colonization were observed, 15 pretracheotomy and 34 posttracheotomy; of these, 12 (80%) and 19 episodes (56%), respectively, were primary endogenous, ie, present in the oropharynx on hospital admission and subsequently at tracheotomy. Only one colonization episode (7%) of exogenous pathogenesis was observed during transtracheal intubation, while 12 (35%) (p=0.02) occurred after tracheotomy. An equal number of secondary endogenous colonization episodes (two and three, ie, acquired in the oropharynx after PICU admission and after tracheotomy, respectively, were recorded. CONCLUSIONS: (1) Despite a high level of hygiene, exogenous colonization without subsequent infection was common. (2) Although all patients were colonized, the infection rate was lower after tracheotomy. This may be due to enhanced immunity (medically stable) and improved tracheobronchial toilet. (3) Microorganisms in children with tracheotomy differ from those in adults.

Moreira B.M. et al. *Antimicrobial resistance in staphylococci*. Pediatr Clin North Am. 1995; 42(3) : 619-48.p Abstract: Staphylococci have developed a variety of strategies for dealing with the presence of antibiotics encountered in clinical environments. Resistance to beta-lactams and other antimicrobial agents has been accomplished by a diverse array of molecular mechanisms. Options available to treat infections caused by staphylococci resistant to methicillin are limited, and the next generation of antibiotics to be introduced, should glycopeptide resistance become an important clinical problem, is not yet on the horizon.

Moreira M. et al. *[Effect of nosocomial bacteremia caused by oxacillin-resistant Staphylococcus aureus on mortality and length of hospitalization]*. Rev Assoc Med Bras. 1998; 44(4) : 263-8.p Abstract: OBJECTIVES: To identify the attributed mortality rate of bloodstream hospital infection by Staphylococcus aureus resistant to methicillin (MRSA) and its effect on length of hospital stay. DESIGN: Case-control study. SETTING: Hospital Sao Paulo da Universidade Federal de Sao Paulo, a 660-bed, tertiary-care teaching hospital in Sao Paulo, Brazil. PATIENTS: Seventy one adults patients with hospital-acquired MRSA bacteremia diagnosed between January 1, 1991, and September 30, 1992, and 71 MRSA-free controls were matched by the following criteria: age, sex, underlying disease, surgical procedure, same risk time and admission date. RESULTS: The incidence of patients with hospital sepsis by MRSA accounted for 73.22% of the patients with hospital bloodstream infection by Staphylococcus aureus. The mortality rate of the cases was 56.33 (40/71) and 11.26 (8/71) of the controls. The attributable mortality rate was 45.07% (OR = 17.0; IC 95% = 3.58-202.26; p = 0.000001). The length of hospital stay median time was of 32.55 days for the cases and 29.75 for the controls (p = 0.32). CONCLUSION: A high level of sepsis by MRSA was observed in all the Staphylococcus aureus bacteremia. The bloodstream hospital infection by MRSA itself does provide a high level of mortality independently from the patients base disease, without however, increasing their hospital length of stay.

Morel P. et al. *[Surveillance of biocontamination of the environment of labile blood products: its role in a quality assurance program]*. Transfus Clin Biol. 1998; 5(4) : 251-9.p Abstract: As part of a quality assurance approach aiming at reducing the risk of bacterial contamination of labile blood components (BC), their environment was submitted to a twofold quality control. A yearly control was carried out by the University Hospital Laboratory of Hygiene (UH-LH). Another control was regularly implemented by our Quality Control Laboratory. In accordance with this quality system, we focused our attention on decontamination procedures, control targets and the definition of an acceptable threshold. The analysis of results over 1 year showed that they can be considered as satisfactory when less than 40 CFU/100 cm2 are found. Quality sheets were developed, aimed at motivating our staff, adapting the decontamination procedures and initiating corrective measures. This quality programme allowed us to develop close collaboration links with the UH-LH and to play a role in the prevention of hospital-acquired infections.

Moreno F. et al. *The clinical and molecular epidemiology of bacteremias at a university hospital caused by pneumococci not susceptible to penicillin.* J Infect Dis. 1995; 172(2) : 427-32.p Abstract: To determine the epidemiology of bacteremias due to pneumococci not susceptible to penicillin (PNSP) at a university hospital, active microbiologic surveillance of bacteremias due to PNSP was done for 28 months. Controls were bacteremias caused by penicillin-susceptible pneumococci. Antimicrobial susceptibilities for alternative antibiotics were determined. Pulsed-field gel electrophoresis (PFGE) and serotyping were used as markers of strain identity. Of 113 pneumococcal isolates, 14 (13%) were intermediate or resistant to penicillin (MIC > or = 0.1 microgram/mL). Twelve PNSP were resistant to other drugs: chloramphenicol (5), tetracycline (6), trimethoprim-sulfamethoxazole (5), cefotaxime (1), and erythromycin (1). Independently significant risk factors associated with PNSP bacteremia were sepsis and prior treatment with beta-lactam antibiotics. PFGE revealed 10 distinguishable patterns among 12 isolates available for typing. In general, PFGE typing correlated with serotyping. It also distinguished some isolates of the same serotype. PFGE typing and serotyping suggest that the frequency of PNSP in the San Antonio, Texas, area is not due to dissemination of a single clonal strain.

Moreno G. et al. *Incidência e caracterização de bactérias com resistência múltipla antimicrobiana em leite mastítico bovino da região centroàoeste do Estado de São Paulo, Brasil.* Braz. j. vet. res. anim. sci. 1997; 34(1) : 207-10.p Abstract: Foram analisadas a incidência e a multiàresistência a drogas antimicrobianas em bactérias patogênicas isoladas de 750 amostras de leite de vacas com mastite subàclínica, na regiãoàcentro oeste do Estado de São Paulo. Os microorganismos do gênero Staphylococcus (75,8 por cento), principalmente representados pelos S. aureus e S. epidermes, e a Escherichia coli (7,1 por cento) foram as bactérias mais frequentemente isoladas. A maioria dos agentes etiológicos apresentouàse em cultura pura, embora associações de microorganismos tenham sido encontradas em algumas amostras. A resistência múltipla a drogas antimicrobianas (penicilina, ampicilina, dicloxacilina, estreptomicina, tetraciclina e oxacilina) foi observada somente entre bactérias Gram negativas e em algumas linhagens de S. aureus (39,9 por cento). Os demais agentes bacterianos Gram positivos demonstraram sensibilidade as drogas testadas. Os problemas consequentes da resistência múltipla a drogas constituem um obstáculo a terapêutica e de difícil solução, principalmente através de programas de controle a curto prazo (AU).

Moreno J.M. et al. *[Home parenteral nutrition. A six-year combined program (adult and pediatric patients)].* Med Clin (Barc). 2000; 114(16) : 617-8.p Abstract: BACKGROUND: To describe the outcomes of an adult-pediatric home parenteral nutrition (HPN) program. PATIENTS AND METHODS: Retrospective protocol between 1993 and 1999. RESULTS: Sixteen adults (average 45.7 years) and eight children (3.1 years) were included in the program. Mean length of parenteral nutrition was 507 (SD: 624) and 155 (SD: 129) days respectively. Total follow-up time was 8,119 days for adults and 1,242 for children. Cancer was the main diagnosis in adults and intractable diarrhea in children. Central venous catheter related infections were the most usual complication (0.63 and 1.2 episodes/patient/year). There were no deceases due to the HPN in the period of study. CONCLUSIONS: HPN is an effective and safe technique, although prevalence and incidence in Spain are low.

Morgan M. et al. *The population impact of MRSA in a country: the national survey of MRSA in Wales, 1997.* J Hosp Infect. 2000; 44(3) : 227-39.p Abstract: Continuous data collection on all new isolates of MRSA via CoSurv has taken place in Wales since January 1996. In order to audit this data collection, and to address some of the issues that it does not include, a survey of MRSA was carried out. Questionnaires were completed by infection control teams. Rates were calculated using hospital throughput denominators. Results from the one-day prevalence survey, the two-week incidence survey, and the follow-up survey carried out on new MRSA patients identified in the incidence survey, are presented. Results were found to be broadly similar to those collected via routine surveillance. MRSA was found frequently and disproportionately in the elderly, with higher rates in male than female patients. The highest incidence of total and invasive MRSA was in males aged 75 and over (total: 12.5/1000 finished consultant episodes; invasive: 2.8/1000). Although there was a large community reservoir of MRSA, most appeared to have been acquired in hospital, since most patients had a history of hospitalization, often with multiple hospital admissions. Community-based isolates from cases with no hospital history tended to have been from ulcers. Prevalence and incidence of MRSA was relatively low compared with hospital throughput (mean prevalence: 2.4/100 occupied beds; mean incidence: 3.6/1000 finished consultant episodes), there was also quite large variation between sites, even when screening samples were removed. Patients with MRSA had strikingly long stays before isolation of the organism (prevalence survey: 39 days; incidence survey: 31 days) and highest incidence occurred in elderly care wards. The outcome survey showed that approximately half of the patients were treated with some type of antimicrobial therapy for MRSA. Decontamination therapy was associated with clearance of MRSA only when controlling for sex of the patient. The majority of patients were discharged still with MRSA, mostly to their own homes. The survey emphasizes the need to continue surveillance to detect any changes, to allow guidelines based on evidence to be developed and to monitor the effectiveness of such guidelines. Copyright 2000 The Hospital Infection SocietyCopyright 2000 The Hospital Infection Society.

Morguet A.J. et al. *[Infectious endocarditis of native and prosthetic valves. A comparative analysis based on 155 cases].* Dtsch Med Wochenschr. 1995; 120(36) : 1191-6.p Abstract: OBJECTIVE: In a retrospective study, we compared the characteristics of native valve and prosthetic valve endocarditis. PATIENTS AND METHODS: All 155 cases of left-sided infective endocarditis in 142 patients admitted at our institution between 1986 and 1992 were analyzed based on their medical records. Native valve endocarditis was found in 119 cases (74 men, 45 women; median age 55, range 29 to 80 years), prosthetic valve endocarditis in 36 cases (11 men, 25 women; median age 63, range 38 to 80 years; 29 cases of late infection). RESULTS: There were more older ($P < 0.0005$) and more female ($P = 0.001$) patients with prosthetic valve endocarditis. Most frequently, native aortic valves (53.8%) or mitral prostheses (55.6%) were solely involved. In both groups, Staphylococcus epidermidis was the most frequent isolate followed by Staphylococcus aureus and Enterococci. Symptoms and clinical findings were similar in both groups. In all cases since July 1989, transthoracic echocardiography was suggestive of endocarditis in native valves in 63.9% and in prostheses in 29.2% ($P = 0.004$), combined with the transesophageal approach in 91.7 and 91.8%, respectively (not significant). Embolism and surgical intervention were about equally frequent in both groups. The in-hospital mortality was 19.3% in native valves and 22.2% in prostheses (not significant). CONCLUSION: Native valve and late prosthetic valve endocarditis are now similar in the spectrum of causative microorganisms, echocardiographic diagnostics, clinical course and prognosis.

Mori K. et al. *Transcatheter embolization of mycotic aneurysm of the subclavian artery with metallic coils.* J Cardiovasc Surg (Torino). 2000; 41(3) : 463-7.p Abstract: Mycotic aneurysms of the subclavian artery are rare. This report describes an experience of 2 rare cases in which transcatheter embolization with metallic coils was performed for the management of these lesions alternative to surgery. Two patients who had been treated with chemotherapy for malignant neoplasms were diagnosed as having mycotic aneurysms of the left subclavian artery. The causes of these lesions were presumed to be the invasion of the arterial wall by the pulmonary abscess in case 1, and wound infection after placement of the reservoir for intraarterial chemotherapy

in case 2. In both cases, proximal and distal sites of the aneurysm were embolized with metallic coils. In case 1, the vertebral artery was also embolized with Guglielmi detachable coils to avoid retrograde blood flow. Both aneurysms were completely occluded by a single embolization. In case 1, although weakness and paresthesia of the left hand remained, lethal hemoptysis due to aneurysmal fistulization to the lung parenchyma ceased. In case 2, no neurological deficit except for mild paresthesia in the left thumb had been observed. Both patients died of primary disease 10 and 5 months after the procedure. Transcatheter embolization is technically feasible and effective enough to treat the mycotic aneurysm of the subclavian artery even in the situation in which the surgical option seems to be difficult or risky.

Morinushi T. et al. *The relationship between gingivitis and the serum antibodies to the microbiota associated with periodontal disease in children with Down's syndrome.* J Periodontol. 1997; 68(7) : 626-31.p Abstract: Gingival inflammation in Down's syndrome children (DS) develops earlier and is more rapid and extensive than in non-DS children. Abnormalities in host response to the oral flora have been proposed as etiological factors of this gingival inflammation. However, the relationship between gingivitis and the host response to oral microorganisms in DS by age has not been determined. The objective of this study was to clarify this relationship. Sera were obtained from 75 DS subjects (aged 2 to 18 years) and their gingival health assessed using a modified PMA Index (M-PMA). Antibody titers to Porphyromonas gingivalis (Pg), Prevotella intermedia (Pi), Treponema denticola (Td), Fusobacterium nucleatum (Fn), Selenomonas sputigena (Sel), Actinobacillus actinomycetemcomitans (Aa), and Streptococcus mitis (Mi) were determined using the micro-ELISA. DS subjects under 4 years old were found to have significantly more gingival inflammation than did normal children the same age. A significant positive correlation ($r = 0.548$, $P < 0.0001$) existed in the relationship between M-PMA score and plaque score for subjects in the G1 age group (deciduous dentition). At G1, the average antibody titers to Aa, Mi, and Fn exceeded those of the normal adult reference serum pool. In addition, IgG antibody titers to Pg, Aa, Fn, Sel, and Mi correlated significantly with the M-PMA scores in the G1 age group. There was a correlation between age (2 to 18 years) and these antibody titers. IgG antibody titers to Pg, Aa, Sel, and Mi increased significantly with increasing M-PMA score. Furthermore, the IgG antibody titers to Pg were higher ($P < 0.05$) in the most extensive disease group compared to the DS no-disease group. The IgG antibody titers to Pg at G3 (early puberty) were significantly higher when compared to G1 (preschool children). The IgM antibody titers to Aa at G3 were higher ($P < 0.05$) when compared to G1. This study suggests that colonization by Aa and Fn are closely associated with the onset of gingival inflammation in DS patients under 5 years old. Colonization by Pg, Aa, Sel, and Mi in DS appears to be associated with gingivitis at puberty.

Morita J.Y. et al. *Impact of azithromycin on oropharyngeal carriage of group A Streptococcus and nasopharyngeal carriage of macrolide-resistant Streptococcus pneumoniae.* Pediatr Infect Dis J. 2000; 19(1) : 41-6.p Abstract: BACKGROUND: Invasive group A streptococcal (GAS) infections are a cause of serious morbidity and high mortality. There is a need for a simple, effective antimicrobial regimen that could be used to prevent invasive GAS disease in high risk situations. To assess azithromycin as a chemoprophylactic agent, we evaluated its efficacy for eradication of oropharyngeal (OP) GAS and its impact on the nasopharyngeal (NP) colonization rate of macrolide-resistant Streptococcus pneumoniae. METHODS: We obtained OP and NP swabs for GAS and pneumococcus culture, respectively, from 300 schoolmates of a child with an invasive GAS infection. GAS culture-positive students were treated with daily azithromycin (12 mg/kg/day) for 5 days. We obtained follow-up OP and NP swabs at 9 (Day 17) and 24 (Day 32) days post-treatment from those students identified as GAS carriers on Day 0 and determined macrolide susceptibility of GAS and pneumococcal isolates. RESULTS: Of the 300 students swabbed 152 (50%) carried GAS in their oropharynx. On Day 17, efficacy of azithromycin for GAS eradication was 95% (140 of 147) for all students. NP colonization rates for pneumococci decreased from 46% (67 of 146) to 12% (17 of 144; $P < 0.001$) by Day 17 and to 20% (27 of 137; $P < 0.001$) by Day 32. The prevalence of erythromycin-resistant pneumococcal isolates increased from 2% (3 of 146) to 4% (6 of 144) by Day 17 and to 8% (11 of 137; $P = 0.04$) by Day 32. CONCLUSIONS: Azithromycin is an effective short course regimen for eradication of oropharyngeal GAS. However, azithromycin selected for macrolide-resistant strains of pneumococci. These findings highlight the importance of determining the appropriate circumstances for antimicrobial prophylaxis to prevent invasive GAS infections.

Moriuchi M. et al. *Exposure to bacterial products renders macrophages highly susceptible to T-tropic HIV-1.* J Clin Invest. 1998; 102(8) : 1540-50.p Abstract: Microbial coinfections variably influence HIV-1 infection through immune activation or direct interaction of microorganisms with HIV-1 or its target cells. In this study, we investigated whether exposure of macrophages to bacterial products impacts the susceptibility of these cells to HIV-1 of different cellular tropisms. We demonstrate that () macrophages exposed to bacterial cell wall components such as lipopolysaccharide (LPS) (Gram-negative rods), lipoteichoic acid (Gram-positive cocci), and lipoarabinomannan (Mycobacteria) become highly susceptible to T cell (T)-tropic HIV-1 (which otherwise poorly replicate in macrophages) and variably susceptible to macrophage (M)-tropic HIV-1; () LPS-stimulated macrophages secrete a number of soluble factors (i.e., chemokines, interferon, and proinflammatory cytokines) that variably affect HIV infection of macrophages, depending on the virus phenotype in question; and () LPS-stimulated macrophages express CCR5 (a major coreceptor for M-tropic HIV-1) at lower levels and CXCR4 (a major coreceptor for T-tropic HIV-1) at higher levels compared with unstimulated macrophages. We hypothesize that a more favorable environment for T-tropic HIV-1 and a less favorable or even unfavorable environment for M-tropic HIV-1 secondary to exposure of macrophages to those bacterial products may accerelate a transition from M- to T-tropic viral phenotype, which is indicative of disease progression.

Moroni M. et al. *Bacterial pneumonia in adult patients with HIV infection.* J Chemother. 1995; 7(4) : 292-306.p Abstract: Patients with HIV infection are at increased risk for community-acquired bacterial pneumonias, due in part to their defects in B-cell function. Streptococcus pneumoniae is the commonest cause of community-acquired pneumonia, with the second most common bacterial agent being Haemophilus influenzae. These two organisms account for about two-thirds of community-acquired bacterial pneumonias. Frequently bacterial pneumonias appear difficult to distinguish from Pneumocystis carinii pneumonia or other opportunistic lung infections, because of their atypical clinical and radiologic presentations. Community-acquired pneumonias may be recurrent but have low fatality rates. In comparison, nosocomial pneumonias occur primarily in patients with AIDS and are usually due to Staphylococcus aureus, Pseudomonas aeruginosa and other aerobic gram-negative bacilli. Nosocomial pneumonias have high fatality rates. S.aureus is an important cause of morbidity and mortality in patients with AIDS and has emerged as a secondary opportunist in lungs of patients with opportunistic diseases. While appropriate laboratory study is being done, empiric antibiotic therapy should be directed against the microorganisms above described.

Morris A.J. et al. *Susceptibility patterns of bacterial isolates from intensive care and haematology/oncology patients in New Zealand.* N Z Med J. 1997; 110(1044) : 187-9.p Abstract: AIMS: To determine the current susceptibility pattern of bacterial isolates from intensive care and haematology/oncology patients in New Zealand. METHOD: Over a 6 month period 417 consecutive clinically relevant bacterial isolates from intensive care and haematology/oncology patients from

seven New Zealand hospitals had their susceptibility to multiple antimicrobial agents determined by the agar plate dilution method. Methicillin resistant staphylococci were not included. RESULTS: Of the 417 isolates, 224 (54%) were gram negative and 193 were gram positive. Predominant species/groups were: Escherichia coli 63 (15%), Enterobacter spp 26 (6%), other Enterobacteriacae 41 (10%), Pseudomonas aeruginosa 42 (10%), Staphylococcus aureus 111 (27%), coagulase negative staphylococci 30 (7%), Streptococcus spp 31 (7%), and Enterococcus spp 19 (5%). Isolate sources were: respiratory tract, 170 (41%); cutaneous sites, 81 (19%); blood, 64 (15%); and urine 63 (15%). Resistance was uncommon amongst staphylococci, streptococci, enterococci, and H influenzae. No vancomycin resistant or beta-lactamase-positive enterococci were encountered. For different groups of enteric gram negative bacilli: amoxycillin and amoxycillin-clavulanic acid resistance was common, 46-93% and 24-85% respectively; cefpirome was the most active cephalosporin; aminoglycoside resistance was uncommon; and no isolate possessed extended spectrum beta-lactamase. For P aeruginosa: most isolates were susceptible to cefpirome and ceftazidime, and aminoglycoside resistance was uncommon. CONCLUSION: Gram positive bacteria make up a higher proportion of isolates than in a similar European study. At present New Zealand does not have widespread resistance amongst common isolates. Several agents currently available in New Zealand provide adequate cover for commonly encountered pathogens. The choice of which agent to choose therefore rests more with their purchase and administration costs, as well as safety and efficacy data than simply susceptibility data alone.

Morris A.J. et al. *Clinical impact of bacteria and fungi recovered only from broth cultures.* J Clin Microbiol. 1995; 33(1) : 161-5.p Abstract: We prospectively evaluated 356 bacteria and fungi recovered from broth enrichment tubes from cultures with sterile direct plates to determine the clinical impact of isolates recovered only from broth cultures. These "broth only" isolates (BOI) were classified as contaminants or true on the basis of review of patient charts. True isolates were considered clinically relevant only if they altered or should have altered patient management. Of 356 BOI, 259 (73%) were considered contaminants (mostly coagulase-negative staphylococci and Propionibacterium spp.) and 97 (27%) were considered true. For individual microorganisms, 9 of 9 (100%) Staphylococcus aureus isolates, 13 of 13 (100%) members of the family Enterobacteriaceae, 10 of 12 (83%) fungi, 7 of 10 (70%) enterococci, 7 of 11 (64%) other gram-negative bacilli, 13 of 31 (45%) anaerobic bacteria, 10 of 24 (42%) streptococci, 22 of 140 (16%) coagulase-negative staphylococci, 6 of 92 (7%) Propionibacterium spp., and 0 of 14 (0%) diphtheroids and Bacillus spp. were classified as true. Eleven of 97 (11%) patients with true BOI had clinically relevant isolates. Fifty-nine of the 97 (61%) patients with true isolates already were on therapy, and no change was made because of the BOI. Six (6%) patients with contaminants received therapy for their BOI. We conclude that broth inoculated as an adjunct to direct plating seldom yields results that favorably alter patient management and could be omitted for most specimens without compromising patient care.

Morris J.G. Jr et al. *Enterococci resistant to multiple antimicrobial agents, including vancomycin. Establishment of endemicity in a university medical center.* Ann Intern Med. 1995; 123(4) : 250-9.p Abstract: OBJECTIVES: To determine the distribution of and risk factors for colonization and infection with vancomycin-resistant enterococci; to evaluate the molecular epidemiology of these strains; and to assess the effect of interventions, including 1) strict adherence to infection control procedures and 2) restricted use of vancomycin. DESIGN: Problem identification based on descriptive studies, point-prevalence surveys, and case-control studies and followed by specific interventions and evaluation of the response to these interventions. SETTING: University medical center. PARTICIPANTS: All patients hospitalized between May 1992 and June 1994 (59,196 admissions). MAIN RESULTS: 75 active infections attributed to vancomycin-resistant enterococci were identified. Thirty-one patients (41%) had bloodstream infections and 6 (8%) died. The incidence of active infection was highest in the organ transplantation unit (13.2 infections/1000 admissions). In the point-prevalence studies, vancomycin-resistant enterococci were isolated from 20% of a random sample of hospitalized patients in July, August, and September 1993 (adjusted prevalence, 16.9%). Case-control studies showed significant associations between colonization and infection and 1) receipt of antimicrobial agents, particularly vancomycin, and 2) severity of illness. Although several small case clusters had isolates with identical banding patterns on pulsed field gel electrophoresis, at least 45 different banding patterns were noted among medical center isolates. Interventions took place in November and December 1993. Vancomycin restriction policies resulted in a 59% decrease in intravenous vancomycin use and an 85% decrease in oral vancomycin use. Point-prevalence surveys done in April, May, and June 1994 showed a consistent 20% level of colonization with vancomycin-resistant enterococci strains (adjusted prevalence, 18.7%). No significant changes were seen in rates of vancomycin-resistant enterococci infection. CONCLUSIONS: Vancomycin-resistant enterococci are an important cause of illness and death in the study institution, particularly among organ transplant recipients and other seriously ill persons; they have also become a common intestinal colonizer among hospitalized patients. The diversity of isolates (based on molecular typing studies) suggests that resistant organisms have been introduced from multiple sources. Interventions that effectively lower the overall level of colonization with vancomycin-resistant enterococci must still be identified.

Morschhauser J. et al. *Evolution of microbial pathogens.* Philos Trans R Soc Lond B Biol Sci. 2000; 355(1397) : 695-704.p Abstract: Various genetic mechanisms including point mutations, genetic rearrangements and lateral gene transfer processes contribute to the evolution of microbes. Long-term processes leading to the development of new species or subspecies are termed macroevolution, and short-term developments, which occur during days or weeks, are considered as microevolution. Both processes, macro- and microevolution need horizontal gene transfer, which is particularly important for the development of pathogenic microorganisms. Plasmids, bacteriophages and so-called pathogenicity islands (PAIs) play a crucial role in the evolution of pathogens. During microevolution, genome variability of pathogenic microbes leads to new phenotypes, which play an important role in the acute development of an infectious disease. Infections due to Staphylococcus epidermidis, Candida albicans and Escherichia coli will be described with special emphasis on processes of microevolution. In contrast, the development of PAIs is a process involved in macroevolution. PAIs are especially important in processes leading to new pathotypes or even species. In this review, particular attention will be given to the fact that the evolution of pathogenic microbes can be considered as a specific example for microbial evolution in general.

Mosca D.A. et al. *IB-367, a protegrin peptide with in vitro and in vivo activities against the microflora associated with oral mucositis.* Antimicrob Agents Chemother. 2000; 44(7) : 1803-8.p Abstract: Although the microflora associated with oral mucositis initiated by cytotoxic therapy is not well characterized, several studies suggest that reduction of the microbial load in the oral cavity has some clinical benefit. The MICs of IB-367, a synthetic protegrin analog, ranged from 0.13 to 64 microgram/ml for gram-positive bacteria (Streptococcus mitis, Streptococcus sanguis, Streptococcus salivarius, and Staphylococcus aureus) and from 0.06 to 8 microgram/ml for gram-negative species (Klebsiella, Escherichia, and Pseudomonas). IB-367 exhibited rapid, microbicidal activity against both log- and stationary-phase cultures of methicillin-resistant Staphylococcus aureus (MRSA) and Pseudomonas aeruginosa. At concentrations near the MICs for these two organisms (4 and 2 microgram/ml, respectively), IB-367 reduced viability by more than 3 logs in less than 16 min. Similarly, IB-367 effected a 4-log reduction of the endogenous microflora in pooled human saliva within 2 min at 250 micro-

gram/ml, a concentration readily attained by local delivery. After nine serial transfers at 0.5x the MIC, the MIC of IB-367 for MRSA and P. aeruginosa increased only two to four times. In a phase I clinical study with healthy volunteers, IB-367 was well tolerated, with no detectable systemic absorption. One hour after treatment with 9 mg of IB-367, the prevalence of gram-negative bacteria and yeast was reduced, and the density of the predominant gram-positive oral flora was decreased 1,000 times. IB-367's properties (speed of killing, breadth of spectrum, and lack of resistance) make the compound a strong candidate for the prophylaxis of oral mucositis. Phase II clinical trials with IB-367 are under way for this indication in immunocompromised subjects.

Moshi N.H. et al. *Bacteriology of chronic otitis media in Dar es Salaam, Tanzania.* East Afr Med J. 2000; 77(1) : 20-2.p Abstract: OBJECTIVES: To determine the aetiology of chronic otitis media (COM) in Dar es Salaam and to find out the shelf life of boric acid in spirit ear drops (BAISED). DESIGN: Cross-sectional study. SETTING: Muhimbili Medical Centre and selected primary schools within Dar es Salaam. MAIN OUTCOME MEASURES: Bacterial isolates and their sensitivity patterns and shelf life of BAISED. SUBJECTS AND METHODS: One hundred and seventy six pus swab specimens obtained from 150 patients with COM for more than three months were submitted for culture and antimicrobial sensitivity testing in 1997. RESULTS: The isolates included Pseudomonas aeruginosa (51.7%), Staphylococcus aureus (17.2%), Proteus mirabilis (13.2%), Klebsiella spp. (8.0%), Escherichia coli (5.8%) and unidentified coliforms in 4.0%. All isolates were sensitive to gentamicin. Sensitivity of Pseudomonas aeruginosa and Proteus mirabilis to kanamycin was 98.5% and 100%, respectively. P. aeruginosa was sensitive to chloramphenicol, ampicillin and tetracycline by 58.1%, 10.1% and 8.3%, respectively. Three per cent BAISED inhibited the growth of all Pseudomonas aeruginosa even after it has been stored at room temperature for six weeks. CONCLUSION: Based on these results, the drug of choice for management of COM in Dar es Salaam is gentamicin. However, given its ototoxicity effects and the fact that BAISED is effective and affordable, the later should be the treatment of choice.

Mossel D.A. et al. *[Escherichia coli, other Enterobacteriaceae and additional indicators as markers of microbiologic quality of food: advantages and limitations].* Microbiologia. 1995; 11(1) : 75-90.p Abstract: The 93/43 European Union directive assigns to the food and catering industries the main responsibility for an integrated safety and quality assurance strategy in the food chain. Relying on hazard analysis, followed by design and adoption of control of all critical points and practices ("HACCP"). Hiatus-free compliance with such HACCP-based Codes of Good Practices is to be assessed by monitoring, recording results on process performance charts and gauging such data against experimentally established, attainable and maintainable references ranges ("standards"). Marker microorganisms are a major analytical tool for validating compliance in the sense of the EU directive. They should be expertly chosen amongst microbes usually present in food so that their, whose presence in quantities exceeding predetermined levels point to a lack of microbiological integrity of a food product. This may encompass (i) the potential presence of taxonomically, physiologically and ecologically related pathogens, markers are called index organisms; or else (ii) a lack of process integrity; in this case, markers are termed indicator organisms. The classical index organism was E. coli, introduced in the 1980's to monitor drinking water supplies. It is still used as an appropriate marker to assess the bacteriological safety of raw foods. In the 1920's the coli-aerogenes ("coliform") group was adopted as an indicator to validate the adequate processing, i.e. pasteurization of dairy products. Since the 1950's the entire Enterobacteriaceae taxon is preferred for the latter purpose because it is better defined in determinative sense and includes more organisms of significance. In some food and water supplies, processed for safety, more vigorous or more resistant organisms than the Gram-negative rods are reliable supplementary markers. These include Enterococcus spp., spores of the Clostridium genus, and bacteriophages of E. coli and Bacteroides fragilis mimicking the fate of enteric viruses under particular ecological conditions. Population surveys conducted by the authors provided ranges for epsilon-factors. Those factors were defined as the proportion between colony forming units (cfu) numbers of index organisms and the pathogenic agent to whose potential occurrence they are expected to point. Epsilon factor values obtained for thermotropic Enterobacteriaceae in relation to Salmonella spp. allow the calculation of the probability that the pathogen has been reliably eliminated by the processing of initially contaminated raw materials, when cfu's of the marker organisms remain below a reference range previously fixed.

Motoyama S. et al. *Does central venous pressure reflect the circulating blood volume for the decrement of compliance just after esophagectomy?* Surg Today. 2000; 30(1) : 11-5.p Abstract: This study investigates whether the pressure parameters obtained from the Swan-Ganz catheter (SGC) accurately reflect the circulating blood volume just after en bloc resection of the thoracic esophagus with regional lymph node dissection. It is well known that this operation induces severe hemodynamic changes and although the pressure parameters obtained from the SGC are an accepted means of monitoring circulating blood volume, we have often experienced a discrepancy between the SGC data and the clinical state. We examined the pressure parameters and diameter of the inferior vena cava (IVC) and left ventricle (LV), and the central venous compliance using SGC and echocardiography in ten patients who underwent esophagectomy for esophageal cancer. The central venous pressure, pulmonary arterial mean pressure, and pulmonary artery wedged pressure were significantly increased just after the operation compared with the preoperative levels, while the diameters of the IVC and LV decreased just after the operation. The compliances of the IVC decreased significantly just after the operation. The hemodynamic shift to the third space after esophagectomy induces decrement of the compliances of IVC. As the CVP does not always reflect the circulating blood volume, measuring the diameter of the IVC using echocardiography is extremely useful for monitoring circulating blood volume just after esophagectomy.

Mouly S. et al. *[Resistance to penicillin G and Streptococcus pneumoniae infection at the Hopital Foch, Paris, France, in 1995].* Ann Med Interne (Paris). 1998; 149(6) : 323-5.p Abstract: Decreased susceptibility to penicillin G of pneumococcal strains is continuously increasing in France. OBJECTIVE: We assessed effect of resistance to penicillin on therapeutic management and mortality in adults with pneumococcal pneumonia in our hospital. METHODS: This one-year retrospective study (1995) included patients with proven pneumococcal infection (positive blood culture, pleural fluid, or specimens from the lower respiratory tract). Strains of Streptococcus pneumoniae were screened for susceptibility to antimicrobial agents. Resistance to penicillin G was defined as a minimal inhibitory concentration > or = 0.12 microgram/ml. Age immune and nosocomial status, first and second line antibiotherapy and death were compared according to the strains susceptibility to penicillin G. A p value below 0.05 was statistically significant. RESULTS: In 15 cases a pneumococcal strain susceptible to penicillin G was isolated while 23 patients were infected with a strain with a decreased susceptibility to penicillin G. Age was significantly higher in the latest group (61.6 versus 54.7 years) while no difference was noted between the 2 groups according to immune and nosocomial status, therapeutic management and death. DISCUSSION: Resistance to penicillin did neither appear to increase mortality nor to influence therapeutic management in patients with pneumococcal infection.

Mouton J.W. *Combination therapy as a tool to prevent emergence of bacterial resistance.* Infection. 1999; 27 Suppl 2 : S24-8.p Abstract: Emergence of resistance is an ever increasing problem. One of the methods by which emergence of resistance may possibly be prevented, or at least delayed, is the use of combination therapy. Since the emergence of resistant mutants is a direct result of selective pres-

sure by antimicrobial therapy, the chance of mutants resistant to two antimicrobials in the parent population being present is a product of mutation frequencies, provided that resistance mechanisms are independent. Comparative studies in in vitro pharmacokinetic models and in vivo indicate that emergence of resistance is less common when combination therapy is used. This is particularly true for microorganisms known to develop resistance relatively quickly, such as Pseudomonas aeruginosa, and resistance mechanisms which occur at a relatively high frequency.

Muder R.R. et al. *Multiply antibiotic-resistant gram-negative bacilli in a long-term-care facility: a case-control study of patient risk factors and prior antibiotic use.* Infect Control Hosp Epidemiol. 1997; 18(12) : 809-13.p Abstract: OBJECTIVE: To determine the relation between prior exposure to specific antimicrobials and acquisition of gram-negative bacilli resistant to multiple beta-lactam and aminoglycoside antibiotics among long-term-care patients. DESIGN: Case-control study. Cases were patients from whom multiply resistant Enterobacteriaceae or Pseudomonas aeruginosa were isolated; controls were patients from whom nonresistant bacteria of the same species were isolated. Prospectively defined risk factors included underlying illness, activity level, presence of decubitus ulcers, presence of indwelling devices, and prior exposure to specific antimicrobial agents. Resistant and control isolates of P aeruginosa were compared using pulsed-field gel electrophoresis (PFGE) of genomic DNA after digestion with XbaI. SETTING: 390-bed long-term Veterans' Affairs facility. RESULTS: We identified 35 patients with multiply resistant Enterobacteriaceae and 24 patients with multiply resistant P aeruginosa. Of the resistant Enterobacteriaceae, 87% of isolates were resistant to piperacillin, 55% to ceftazidime, and 90% to gentamicin. Acquisition of multiply resistant Enterobacteriaceae was associated with presence of decubitus ulcers (odds ratio [OR], 12.2; 95% confidence interval [CI95], 3.3-44.2; P =.0002) and prior receipt of ampicillin (OR, 13.7; CI95, 2.2-84; P =.005). Of resistant isolates of P aeruginosa, 88% were resistant to piperacillin, 25% to ceftazidime, 42% to imipenem, and 67% to ciprofloxacin. Isolation of a multiply resistant P aeruginosa was associated with total days of antimicrobial exposure (OR, 1.07; CI95, 1.01-1.12; P =.011) and not with prior receipt of any individual agent. Eleven multiply resistant isolates shared a common PFGE pattern. CONCLUSIONS: In our long-term-care facility, acquisition of multiply resistant Enterobacteriaceae was associated with the presence of decubitus ulcers and prior exposure to ampicillin. Acquisition of resistant P aeruginosa was associated with total antibiotic exposure. Molecular typing of P aeruginosa isolates implicated patient-to-patient transmission of a limited number of resistant strains.

Mukherjee P.K. et al. *Studies on the antibacterial potential of Cryptostegia grandiflora R. Br. (Asclepiadaceae) extract.* Phytother Res. 1999; 13(1) : 70-2.p Abstract : Different extracts of Cryptostegia grandiflora (Roxb) Rbr. leaves were investigated for their antibacterial potential against Pseudomonus cepacia NCIM-2106, Bacillus megatorium NCIM-2087, Staphylococcus aureus NCIM-2492, Escherichia coli NCIM-2345, Bacillus subtilis NCIM-2349 and Bacillus coagulans NCIM 2323. Almost all the extracts produced significant antibacterial activity against all the microorganisms being tested and the effect so produced was comparable to the standard antibiotic, tetracycline hydrochloride. The petroleum ether (60 degrees-80 degrees C) extract showed maximum efficacy.

Mulholland E.K. et al. *A randomized trial of chloramphenicol vs. trimethoprim-sulfamethoxazole for the treatment of malnourished children with community-acquired pneumonia.* Pediatr Infect Dis J. 1995; 14(11) : 959-65.p Abstract: Children in developing countries who present with malnutrition often have infections, particularly pneumonia, at the time of presentation. We evaluated the initial antibiotic management of 144 Gambian children who presented for the first time with malnutrition and who had clinical or radiologic evidence of pneumonia. They were enrolled in a double blind trial of trimethoprim-sulfamethoxazole vs. chloramphenicol. Most children in the study underwent detailed investigations of bacterial and viral etiology as part of another study. The study drug was administered for a week along with oral metronidazole, vitamins and standardized nutritional therapy. Treatment failure was defined as the need for change to parenteral antibiotics during treatment, failure to respond to a week of treatment with the study drug or relapse during the following 2 weeks. There were no differences between the treatment groups in the clinical indicators of severity, etiology or radiologic findings. Thirty-three children were excluded from the analysis because of tuberculosis, inappropriate enrollment or inadequate follow-up. Of the 111 children remaining, 32 (16 in each arm of the study) failed treatment. Clinical failure was not related to in vitro antimicrobial resistance in the 20 cases in which invasive bacterial isolates were obtained. Those who failed treatment were more likely to have had lower chest wall indrawing and positive bacterial cultures than those who were successfully treated. In an area with infrequent antimicrobial resistance of common respiratory pathogens, oral chloramphenicol and trimethoprim-sulfamethoxazole were equally effective in the initial management of malnourished children with community-acquired pneumonia.

Muller F.M. et al. *Antimicrobial peptides as potential new antifungals.* Mycoses. 1999; 42 Suppl 2 : 77-82.p Abstract: Ribosomally synthesized natural antimicrobial peptides (AP) and their synthetic derivatives are small, cationic, amphipathic molecules of 12-50 amino acids with unusually broad activity spectra. These peptides kill microorganisms by a common mechanism, which involves binding to the lipid bilayer of biological membranes, forming pores, and ultimately followed by cell lysis. Several AP from mammals, amphibians, insects, plants and their synthetic derivatives demonstrate promising in vitro activity against various pathogenic fungi including azole-resistant Candida albicans strains. In addition to their antimicrobial activity, some AP such as lactoferrin, interact with a variety of host cells and can increase the activity of natural killer and lymphokine activated killer cells. Pretreatment of polymorphonuclear neutrophil leukocytes (PMN) or monocytes with these AP also may upregulate superoxide release. AP as potential new antifungal agents offer some advantages, such as rapid killing of pathogenic fungi and the difficulty to raise mutants resistant to these peptides. AP are limited by their nonselective toxicity, stability, immunogenicity and their costs of production. Potential clinical applications of AP in the future have to be further explored in preclinical and clinical studies to assess their impact as a new class of antifungals.

Muller-Premru M. et al. *Serotype, antimicrobial susceptibility and clone distribution of Pseudomonas aeruginosa in a university hospital.* Zentralbl Bakteriol. 2000; 289(8) : 857-67.p Abstract: To study the epidemiology of Pseudomonas (P.) aeruginosa, serotyping and antibiotic susceptibility testing were performed on 208 clinical isolates. Sixteen of these isolates were additionally examined by pulsed-field gel electrophoresis (PFGE) of chromosomal DNA. All 208 isolates belonged to 13 of the 16 described serotypes. Thirty isolates (14.4%) belonged to serotype O6, 75 (36%) to serotype O11 and 53 (25.6%) to other serotypes, 42 (20.2%) were polyagglutinating and eight (3.8%), autoagglutinating. Twenty-six per cent of isolates were resistant to piperacillin, 9.1% to ceftazidime, 9.6% to imipenem, 45.7% to ciprofloxacin, 39.9% to amikacin, 51% to gentamicin, 48.6% to netilmicin and 45.2% to tobramycin. Antibiotic resistance varied according to serotype and was highest in serotype O11. Sixteen isolates were analysed by PFGE; nine were multiresistant serotype O11 isolates recovered in four hospital units, while seven were susceptible serotype O6 or O11 isolates from a single unit. The multiresistant serotype O11 isolates had two PFGE patterns indicating that they were capable of spreading: one PFGE pattern was shared by the isolates recovered in spring and the other by those recovered in autumn 1997. The seven susceptible O6 and O11 isolates from a single unit had seven different PFGE patterns. Our results have shown that serotype O11 was the most prevalent P. aeruginosa serotype in our

hospital and that its antibiotic resistance was high. The discriminatory power of serotyping is inadequate to permit the tracing of different strains. Macrorestriction analysis of chromosomal DNA was found to provide the best means of strain discrimination.

Munoz C. et al. *[Microbiological study of the respiratory tract in children with cystic fibrosis].* Enferm Infecc Microbiol Clin. 1996; 14(3) : 142-4.p Abstract: PURPOSE: Pulmonary infections is a main cause of morbimortality in patients suffering from cystic fibrosis. The objective of this study was to know the flora implicated in respiratory pathology of all mucoviscidotic children attending Hospital Sant Joan de Deu of Barcelona. METHODS: Quantitative cultures from respiratory samples (most of them: sputum) of 26 patients were performed from January 91 to June 93. There were 13 girls and 13 boys, aged 1 to 13 years (mean: 7 years). RESULTS: 282 microorganisms were isolated from 203 positive samples. Cultures of 88.4% of patients yielded in some moment Haemophilus influenzae, 82.6% of them Haemophilus parainfluenzae, 65.3% Pseudomonas aeruginosa, 50% Streptococcus pneumoniae, 38.4% Staphylococcus aureus. The most prevalent microorganism was P. aeruginosa (66%) followed by H. influenzae (29%) and S. aureus (26.6%). 59% of P. aeruginosa strains showed a mucoid phenotype. CONCLUSIONS: Haemophilus sp. causes short term infections that affect children of all ages, whereas infections due to P. aeruginosa persist in spite of correct antimicrobial therapy.

Munoz P. et al. *Criteria used when initiating antifungal therapy against Candida spp. in the intensive care unit.* Int J Antimicrob Agents. 2000; 15(2) : 83-90.p Abstract: Invasive candidiasis is a life threatening complication for intensive care unit (ICU) patients. The infection is difficult to recognise so that treatment may be delayed or even not given. Risk factors for candidiasis include the use of antimicrobial agents, central intravascular devices (mainly Hickmann catheters), recurrent gastrointestinal perforations, surgery for acute pancreatitis or splenectomy and renal dysfunction or haemodialysis. Therapy against Candida spp is recommended in ICU patients with endophthalmitis or chorioretinitis possibly caused by Candida spp., in symptomatic patients with risk factors for invasive candidiasis especially if two or more anatomical sites are colonised and for asymptomatic high-risk surgical patients (with recent abdominal surgery or recurrent gastrointestinal perforations or anastomotic leakages). The isolation of Candida from any site poses an increased risk but there are a few microbiological data that might help to establish the predictive value of a particular isolate. These include the site of isolation, the number of culture positive, noncontigous sites, the density of colonisation and the species isolated. Antifungals should be started when Candida spp. are recovered from blood cultures or from usually sterile body fluids, abscesses or wounds in burns patients. They should also be considered in patients with a colonisation index >0.5 or a corrected colonization index >0.4 or when the isolate is identified as Candida tropicalis.

Munoz P. et al. *Haemophilus species bacteremia in adults. The importance of the human immunodeficiency virus epidemic.* Arch Intern Med. 1997; 157(16) : 1869-73.p Abstract: BACKGROUND: Until the late 1970s, invasive infections caused by Haemophilus species were thought to occur mainly in children and only infrequently in adults. OBJECTIVE: To report the largest series to date of Haemophilus species bacteremia (HB) from a single center. DESIGN: Retrospective. SETTING: Large, tertiary care, general teaching hospital. METHODS: We reviewed the charts of adult patients with HB detected from January 1, 1986, to December 31, 1994. Haemophilus strains were serotyped, and the antimicrobial resistance pattern was analyzed. RESULTS: One hundred sixteen patients had HB (0.26 cases per 1000 admissions). Thirty-eight children and 16 adults were excluded. Human immunodeficiency virus (HIV) infection was the most common underlying condition (n = 18 [29%]), followed by malignant neoplasms (n = 12 [19%]) and chronic obstructive pulmonary disease (n = 12 [19%]). Prevalence in HIV-positive patients was 5 cases per 1000 admissions vs 0.2 cases per 1000 admissions in HIV-negative patients. Infection was nosocomial in 16 patients (26%). Focal diseases were pneumonia in 41 patients (66%), cholangitis in 5 patients (8%), endocarditis in 3 patients (5%), meningitis and septic arthritis each in 1 patient (2%), and primary bacteremia in 9 patients (14%). The HIV-positive patients were significantly younger and presented more frequently with pneumonia (P <.05). Overall, 14 patients died (22%). Bacteremia was polymicrobial in 11 patients (18%). Haemophilus influenzae was isolated in 53 patients (85%). Rates of antimicrobial resistance were 11% to chloramphenicol sodium succinate, 48% to ampicillin sodium, 78% to erythromycin stearate, 76% to combined sulfamethoxazole and trimethoprim, 15% to rifampin, and 57% to clarithromycin. CONCLUSIONS: Infection with HIV has become the most common underlying disease in adults with HB in our hospital. Therapeutic approaches must take into account the high rate of antimicrobial resistance.

Munoz P. et al. *Tuberculosis in heart transplant recipients.* Clin Infect Dis. 1995; 21(2) : 398-402.p Abstract: We present an analysis of the incidence, clinical presentation, and evolution of tuberculosis in heart transplant recipients at a 2,200-bed tertiary care center in Madrid and review the world literature. During a 5-year period (1989-1993), active extrapulmonary tuberculosis was diagnosed in three of the 144 patients who survived heart transplantation, resulting in an incidence of 1.35 cases per 100 heart transplant-years (> 20-fold the national average). The mean age of the patients was 52 years, and two were male. The mean time to development of tuberculosis after transplantation was 76 days (range, 55-102 days). All of the patients had had previous episodes of rejection and infection and had had initially negative tuberculin tests (one converted to positive during therapy). Clinical manifestations were mild or absent in two of the patients, and Mycobacterium tuberculosis was isolated in association with other microorganisms from two patients. All patients were successfully treated with antituberculous chemotherapy while they were receiving immunosuppressants. A severe drug interaction between cyclosporine and rifampin in the first case necessitated withdrawal of rifampin and precluded its use in subsequent patients. During a mean follow-up of 2 years, no recurrence of tuberculosis has been detected in any of the patients. Tuberculosis was diagnosed in a fourth patient before transplantation, which was performed while the patient was receiving antituberculous therapy. Our data support the conclusion that heart transplantation should be considered an unheralded risk factor for tuberculosis, particularly in countries where this disease is prevalent.

Munshi A.K. et al. *Relationship between the existing caries status, plaque S. mutans and Cariostat caries activity test in children.* J Indian Soc Pedod Prev Dent. 1999; 17(3) : 73-89.p Abstract: An attempt was made in this study to find out the sensitivity and specificity of a caries activity test, CARIOSTAT and its relationship to the existing caries status and the plaque S. mutans level. The test proved to be highly sensitive and specific with significant relationship to the S.mutans count in the dental plaque. There also was a significant relationship between both the cultured microorganisms on MSB agar and the plaque in the Cariostat medium.

Murakawa G.J. et al. *Cutaneous aspergillosis and acquired immunodeficiency syndrome.* Arch Dermatol. 2000; 136(3) : 365-9.p Abstract: BACKGROUND: Primary cutaneous aspergillosis is an uncommon finding in patients with acquired immunodeficiency syndrome (AIDS); only 13 cases have been reported in the literature. OBSERVATIONS: We describe 11 patients with primary cutaneous aspergillosis and AIDS. There does not seem to be an age, sex, race, or human immunodeficiency virus risk factor predisposition. This is a late manifestation of AIDS; patients typically have low CD4 counts (<0.050 x 10(9)/L [<50/microL]) and other AIDS-defining illnesses. The most frequent presentation is in patients with cytomegalovirus disease and neutropenia caused by ganciclovir therapy. Lesions developed at the site of occlusive dressings for an

indwelling intravenous catheter site in 10 patients. Neutrophil counts may be normal at the time of diagnosis. A minor presentation is in the patient without neutropenia as a result of traumatic inoculation. Histological findings and/or culture results are required for diagnosis. Patients develop cutaneous lesions despite prophylactic therapy with fluconazole. Lesions can be treated with excision and lifelong therapy with itraconazole. CONCLUSION: Because of the potential morbidity and mortality of cutaneous aspergillosis, a high level of suspicion and prompt institution of therapy is required.

Murase M. et al. *[Activities of antipseudomonal agents against clinical isolates of Pseudomonas aeruginosa].* Jpn J Antibiot. 1995; 48(10) : 1581-9.p Abstract: Using clinically isolated 114 strains of Pseudomonas aeruginosa that were collected from April to October 1994, activity of antipseudomonal agents against these organisms was determined using the method of liquid microdilution. In addition, antimicrobial activities of the agents were graded according to serological groups of organisms. The results of this study are summarized as follows. 1. Many strains of P. aeruginosa were isolated mainly from sputum, pus and urine. 2. Serological group G organisms of sputum origin, group I of pus and bile origin, and group E of urine origin were isolated most frequently. 3. The most powerful antipseudomonal agent was cefclidin. Its MIC50 and MIC90 were 0.78 and 6.25 micrograms/ml, respectively. The second most powerful agent was ciprofloxacin whose MIC50 and MIC90 were 0.39 and 12.5 micrograms/ml, respectively. 4. The proportions of resistant strains ranged from 0.9% for cefclidin to 40.4% for ofloxacin. The antipseudomonal agents to which 30% or more of strains were resistant were cefpirome, gentamicin and ofloxacin. 5. Cefclidin showed the most powerful activity against strains that were resistant to ceftazidime, imipenem, gentamicin and ofloxacin. Its MIC90 against all strains resistant to ceftazidime, gentamicin and ofloxacin was 6.25 micrograms/ml. The MIC90 of cefclidin and tobramycin against imipenem-resistant strains was 3.13 micrograms/ml. 6. Group E organisms were found among strains resistant to ceftazidime, gentamicin and ofloxacin at high rates, but no group E strains were found among imipenem-resistant organisms. 7. Agents with highest activities by serological group of organisms were cefclidin against group A, tobramycin and ciprofloxacin against group B, imipenem against group E, ciprofloxacin against group G, and cefclidin and ciprofloxacin against group I.(ABSTRACT TRUNCATED AT 250 WORDS).

Murillo J. et al. *Skin and wound infection by rapidly growing mycobacteria: An unexpected complication of liposuction and liposculpture.* Arch Dermatol. 2000; 136(11) : 1347-52.p Abstract: OBJECTIVE: To describe 10 patients with skin and soft tissue infection caused by rapidly growing mycobacteria after cosmetic liposuction and liposculpture. DESIGN: Case series. SETTINGS: Eight private geographically separate surgical facilities from a single metropolitan area. PATIENTS: Eight patients with definite and 2 with presumptive cases of skin and soft tissue infection caused by rapidly growing mycobacteria after cosmetic surgery procedures during a 24-month period. Microorganisms were isolated from the purulent drainage obtained from wounds or fistulas in 8 cases and were identified as Mycobacterium fortuitum (3 cases) and Mycobacterium abscessus (5 cases) by routine microbiologic techniques. Acid-fast bacilli were observed on Ziehl-Neelsen-stained smears in the 2 remaining cases, but these ultimately failed to grow. In 2 of the surgical units, no apparent environmental predisposing factors were identified after thorough microbiologic environmental investigation. Clinically, all patients exhibited signs of inflammation, microabscesses, and purulent wound drainage within 24 months of abdominal and/or thigh liposuction or homologous fat tissue injection. INTERVENTION: A combined therapeutic approach including surgical drainage, debridment, and prolonged (>3 months) treatment with combined antimicrobial agents including clarithromycin was used in all cases. RESULTS: Nine of 10 patients responded to the combined therapeutic approach, and no evidence of infection was present during at least 12 months of follow-up. CONCLUSION: To our knowledge, this is the first series of patients with rapidly growing mycobacterial infections to be described after liposuction and liposculpture. Rapidly growing mycobacteria should be included in the differential diagnosis of skin and soft tissue infection after cosmetic surgery. Arch Dermatol. 2000;136:1347-1352.

Murray B.E. *Diversity among multidrug-resistant enterococci.* Emerg Infect Dis. 1998; 4(1) : 37-47.p Abstract: Enterococci are associated with both community- and hospital-acquired infections. Even though they do not cause severe systemic inflammatory responses, such as septic shock, enterococci present a therapeutic challenge because of their resistance to a vast array of antimicrobial drugs, including cell-wall active agents, all commercially available aminoglycosides, penicillin and ampicillin, and vancomycin. The combination of the latter two occurs disproportionately in strains resistant to many other antimicrobial drugs. The propensity of enterococci to acquire resistance may relate to their ability to participate in various forms of conjugation, which can result in the spread of genes as part of conjugative transposons, pheromone-responsive plasmids, or broad host-range plasmids. Enterococcal hardiness likely adds to resistance by facilitating survival in the environment (and thus enhancing potential spread from person to person) of a multidrug-resistant clone. The combination of these attributes within the genus Enterococcus suggests that these bacteria and their resistance to antimicrobial drugs will continue to pose a challenge.

Murray B.E. *Problems and perils of vancomycin resistant enterococci.* Braz J Infect Dis. 2000; 4(1) : 9-14.p Abstract: Enterococci have been a therapeutic challenge for haIfa century; first in the management of endocarditis, then associated with the emergence of resistance to streptomycin and later to all aminoglycosides, and now with the increasing levels of resistance to penicillins. A major leap in the problem of antimicrobial resistance occurred more than a decade ago when vancomycin resistant enterococci (VRE) were first identified. This resulted from the acquisition by Enterococcus faecium of vancomycin resistant genes. Five types of vancomycin resistance have since been described (VanA-VanE) and others also appear to exist. VanA and VanB are caused by complex gene clusters that may be plasmid and/or transposon encoded. As a result of the gene cluster, cell wall precursors in the bacteria are formed that do not allow effective vancomycin binding, thus the action of vancomycin to inhibit cell wall synthesis is prevented. Therapy of infections caused by VRE is difficult, but a number of potentially effective antibiotics are now being tested in humans, including quinupristin/dalfopristin, linezolid, evernimomycin, daptomycin and LY333328. Combinations of antibiotics such as ampicillin with quinupristin/dalfopristin or with imipenem, and newer fluoroquinolones are also being evaluated. Until the time when these drugs become available, we must rely on careful monitoring of microbial transmission in hospitals, and we must utilize multi-faceted approaches to prevent the increase in the number and spread of VRE.

Musa M.O. et al. *The spectrum of Fusarium infection in immunocompromised patients with haematological malignancies and in non-immunocompromised patients: a single institution experience over 10 years.* Br J Haematol. 2000; 108(3) : 544-8.p Abstract: Fusarium is a newly emerging fungal pathogen associated with significant morbidity and mortality in the immunocompromised host. We have reviewed our hospital's experience with Fusarium between 1985 and 1995. Fusarium species were isolated from 22 specimens, representing 11 patients. Cases were not clustered by time period. The median age of the patients was 36.5 years (range 17-69 years). The sources of the organism were 12 skin lesions from eight patients, seven blood cultures from two patients and one specimen each from a Hickman catheter tip, nail clippings and a bronchoalveolar lavage. Seven of the patients had chemotherapy-induced neutropenia when the Fusarium was isolated. Five of them developed invasive fusarosis during acute leukaemia induction treatment. They remained neu-

tropenic, and none survived. The other two patients recovered from neutropenia and were treated successfully for this infection. The remaining four patients were not neutropenic or immunocompromised. Three grew Fusarium from skin or nail clippings and one from bronchial alveolar lavage (BAL). There was no evidence of invasive disease in any of the four. None of them received antifungal therapy, and they were all alive at last follow-up. We conclude that Fusarium is a newly emerging infection in neutropenic patients. A high index of suspicion, especially for skin lesions, will help in early diagnosis before systemic and visceral dissemination. Excision of the initial focus of infection and antifungal therapy, aided by speedy neutrophil recovery, are likely to protect patients threatened with these fatal infections. Fusarium isolated from non-neutropenic, non-immunosuppressed patients is not significant and does not merit systemic antifungal treatment.

Musoke R.N. *Rational use of antibiotics in neonatal infections.* East Afr Med J. 1997; 74(3) : 147-50.p Abstract: Review of the management of neonatal infections is done with the aim of guiding the clinician on appropriate therapy. Minimum investigations should include a white blood cell count including the L:T ratio and a blood culture. The bulk of infections at Kenyatta National Hospital newborn unit are caused by Klebsiela, Citrobacter and Staphylococcus aureus. During the 1990's considerable resistance to gentamicin has developed. Currently, cephalosporins chloramphenicol have the best sensitivity pattern. The diagnosis must be carefully verified at different stages of treatment to ensure that only those requiring antimicrobial therapy get it. Indiscriminate use is thus avoided. This in turn minimises development of antibiotic resistant organisms. Failure of response to antimicrobials sometimes means a non infectious cause of illness or poor supportive management. Continuous surveillance is recommended with emphasis on primary prevention of infection as well as cross infections.

Musser J.M. *Antimicrobial agent resistance in mycobacteria: molecular genetic insights.* Clin Microbiol Rev. 1995; 8(4) : 496-514.p Abstract: The primary theme emerging from molecular genetic work conducted with Mycobacterium tuberculosis and several other mycobacterial species is that resistance is commonly associated with simple nucleotide alterations in target chromosomal genes rather than with acquisition of new genetic elements encoding antibiotic-altering enzymes. Mutations in an 81-bp region of the gene (rpoB) encoding the beta subunit of RNA polymerase account for rifampin resistance in 96% of M. tuberculosis and many Mycobacterium leprae isolates. Streptomycin resistance in about one-half of M. tuberculosis isolates is associated with missense mutations in the rpsL gene coding for ribosomal protein S12 or nucleotide substitutions in the 16S rRNA gene (rrs). Mutations in the katG gene resulting in catalase-peroxidase amino acid alterations nad nucleotide substitutions in the presumed regulatory region of the inhA locus are repeatedly associated with isoniazid-resistant M. tuberculosis isolates. A majority of fluoroquinolone-resistant M. tuberculosis isolates have amino acid substitutions in a region of the DNA gyrase A subunit homologous to a conserved fluoroquinolone resistance-determining region. Multidrug-resistant isolates of M. tuberculosis arise as a consequence of sequential accumulation of mutations conferring resistance to single therapeutic agents. Molecular strategies show considerable promise for rapid detection of mutations associated with antimicrobial resistance. These approaches are now amenable to utilization in an appropriately equipped clinical microbiology laboratory.

Muzio M. et al. *Toll-like receptors: a growing family of immune receptors that are differentially expressed and regulated by different leukocytes.* J Leukoc Biol. 2000; 67(4) : 450-6.p Abstract: Toll is a Drosophila gene essential for ontogenesis and antimicrobial resistance. Several hortologues of Toll have been identified and cloned in vertebrates, namely Toll-like receptors (TLR). Human TLR are a growing family of molecules involved in innate immunity. TLR are structurally characterized by a cytoplasmic Toll/interleukin-1R (TIR) domain and by extracellular leucine-rich repeats. TLR characterized so far activate the MyD88/IRAK signaling cascade, which bifurcates and leads to NF-kappaB and c-Jun/ATF2/TCF activation. Genetic, gene transfer, and dominant-negative approaches have involved TLR family members (TLR2 and TLR4) in lipopolysaccharide recognition and signaling. Accumulating evidence suggests that some TLR molecules are also involved in signaling receptor complexes that recognize components of gram-positive bacteria and mycobacteria. However, the definitive role of other TLR is still lacking. A systematic approach has been used to determine whether different human leukocyte populations selectively or specifically expressed TLR mRNA. Based on expression pattern, TLR can be classified as ubiquitous (TLR1), restricted (TLR2, TLR4, and TLR5), and specific (TLR3). Expression and regulation of distinct though overlapping ligand recognition patterns may underlie the existence of a numerous, seemingly redundant, TLR family. Alternately, the expression of a TLR in a single cell type may indicate a specific role for this molecule in a restricted setting.

Mylanus E.A. et al. *[Choice of ear drops in chronic otorrhea].* Ned Tijdschr Geneeskd. 2000; 144(26) : 1261-6.p Abstract: In chronic otitis, the use of ear drops has certain advantages over the use of systemic antibiotics. The choice of ear drop depends on the condition of the eardrum, microbial pathogens present and the efficacy of the components of the ear drop. Ototoxicity, contact allergy and the development of bacterial resistance have to be taken into account. Ototoxicity is a rare complication of the application of ear drops, most often described when aminoglycosides were applied. Contact allergy is also most often seen in aminoglycoside-containing eardrops. Evaluation of ear swabs demonstrated a 5% resistance of Pseudomonas aeruginosa to ciprofloxacin. The appearance of resistant strains may impede systemic use of fluoroquinolones. Therefore, this class of antibiotics should be considered as reserve medication only. The first choice in local application of antiseptics in case of an open eardrum is aluminium acetotartrate 1.2% and, of a combination preparation, bacitracin-colistin-hydrocortisone. In case of a closed eardrum (external otitis) aluminium acetotartrate 12%—combination preparations with corticosteroids are advised against in these cases.

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Naber K.G. et al. *In vitro activity of enoxacin versus ciprofloxacin, fleroxacin, lomefloxacin, ofloxacin, pefloxacin, and rufloxacin against uropathogens.* Chemotherapy. 1998; 44(2) : 77-84.p Abstract: Minimum inhibitory concentrations (MIC) of enoxacin, ciprofloxacin, fleroxacin, lomefloxacin, ofloxacin, pefloxacin and rufloxacin were determined against 400 uropathogens cultured from the urine of patients with complicated and/or hospital-acquired urinary tract infections (UTI) using an agar dilution method. The bacterial spectrum consisted of Entero-bacteriaceae (34.5%), enterococci (31.5%), staphylococci (21.2%) and non-fermenting bacteria (12.8%). Enoxacin inhibited all but one strain (Enterobacter cloacae) of Enterobacteriaceae up to an MIC of 1 mg/l (MIC90 0.25 mg/l). Regarding the total bacterial spectrum, enoxacin inhibited 54.5, 59.5, 76.0 and 83.8% up to an MIC of 1, 2, 4 and 8 mg/l, respectively. If the same breakpoint of resistance for ofloxacin according to DIN 58,940 (NCCLS), i.e. MIC > or = 4 mg/l (> or = 8 mg/l), is also taken for the other fluoroquinolones, and the 126 strains of enterococci are excluded, for which alternative agents, e.g. aminopenicillins, should be considered instead, the following resistance rates were found: ciprofloxacin and enoxacin 15.3% (15.0%), ofloxacin 17.2% (15.3%), pefloxacin 18.2% (15.3%), fleroxacin 19.3% (15.3%), lomefloxacin 19.7% (17.9%) and rufloxacin 31.8% (27.4%). According to their in vitro activity, all fluoroquinolones tested besides rufloxacin show similar rates of resistance against

uropathogens and can therefore be considered good alternative agents for the treatment of complicated UTI.

Nagai K. et al. *Antimicrobial susceptibilities and serotypes of Streptococcus pneumoniae in southwestern Japan and correlation of penicillin-binding protein 2b and 2x mutations in susceptibilities of penicillin G and cefotaxime.* Diagn Microbiol Infect Dis. 2000; 37(2) : 107-13.p Abstract: MICs of penicillin G and other drugs and serotypes were determined for 218 strains of Streptococcus pneumoniae isolated from children in southwestern Japan. Twenty-one (9.6%) and 81 (37.2%) isolates were penicillin-resistant (MIC >/=2.0 microg/ml) and intermediate (MIC 0.13-1.0 microg/ml), respectively. Panipenem was most active parenteral agent against penicillin-intermediate (MIC(90) 0.125 microg/ml) and -resistant strains (MIC(90) 0.25 microg/ml). Among oral beta-lactam agents, cefditoren had good activity against penicillin-intermediate and resistant strains (MIC(90) 0.5/1.0 microg/ml). Serogroup 6 was the most prevalent (65/218) among all strains and 19F (44 strains) was the most prevalent among penicillin-intermediate and -resistant strains. Both pbp2b resistant and susceptible genes were found in penicillin-intermediate strains. Pbp2x resistant genes were found in 33 of 80 (41.3%) cefotaxime-susceptible strains. These results suggest that possible resistance mechanisms may occur even in drug susceptible strains and that drug susceptibility survey should be updated carefully in Japan.

Naganawa R. et al. *Inhibition of microbial growth by ajoene, a sulfur-containing compound derived from garlic.* Appl Environ Microbiol. 1996; 62(11) : 4238-42.p Abstract: Ajoene, a garlic-derived sulfur-containing compound that prevents platelet aggregation, exhibited broad-spectrum antimicrobial activity. Growth of gram-positive bacteria, such as Bacillus cereus, Bacillus subtilis, Mycobacterium smegmatis, and Streptomyces griseus, was inhibited at 5 micrograms of ajoene per ml. Staphylococcus aureus and Lactobacillus plantarum also were inhibited below 20 micrograms of ajoene per ml. For gram-negative bacteria, such as Escherichia coli, Klebsiella pneumoniae, and Xanthomonas maltophilia, MICs were between 100 and 160 micrograms/ml. Ajoene also inhibited yeast growth at concentrations below 20 micrograms/ml. The microbicidal effect of ajoene on growing cells was observed at slightly higher concentrations than the corresponding MICs. B. cereus and Saccharomyces cerevisiae were killed at 30 micrograms of ajoene per ml after 24 h of cultivation when cultivation was started at 10(5) cells per ml. However, the minimal microbicidal concentrations for resting cells were at 10 to 100 times higher concentrations than the corresponding MICs. The disulfide bond in ajoene appears to be necessary for the antimicrobial activity of ajoene, since reduction by cysteine, which reacts with disulfide bonds, abolished its antimicrobial activity.

Nair U.S. et al. *Plasmid profiles and resistance to antimicrobial agents among Salmonella enteritidis isolates from human beings and poultry in the midwestern United States.* J Am Vet Med Assoc. 1995; 206(9) : 1339-44.p Abstract: In the study reported here, 121 Salmonella enteritidis isolates from human beings and 467 isolates from nonhuman sources were analyzed for plasmid pattern and susceptibility to a panel of antimicrobial agents commonly used as biologic markers. A significant ($P < 0.05$) number of isolates from nonhuman sources were resistant to beta-lactam antibiotics and tetracycline. Resistance to aminoglycosides, quinolones, and trimethoprim/sulfamethoxazole was uncommon. Of the 588 isolates, 445 (76%) were resistant to 2 or more antimicrobial agents. Sixty of 121 (50%) S enteritidis isolates from human beings were susceptible to all 12 antimicrobial agents, but 425 of 467 (91%) S enteritidis isolates from nonhuman sources expressed resistance to 1 or more of the antimicrobial agents used in the study. Analysis of plasmid profiles revealed that significantly ($P < 0.05$) more isolates from nonhuman sources had high molecular weight plasmids than did isolates from human beings. Isolates from ceca of chickens were associated with patterns of low molecular weight plasmids. Analysis of results of the study revealed similarities among S enteritidis from human beings and eggs, as determined on the basis of plasmid profiles and antibiotic susceptibility patterns, which may implicate eggs as one of the potential sources for infection of human beings. In addition, periodic monitoring of a substantial number of Salmonella isolates to detect drug resistance may be a prudent practice for use in revising the list of antimicrobial agents commonly used in human beings and other animals.

Nakae M. et al. *[Drug susceptibility of clinically isolated Helicobacter pylori].* Jpn J Antibiot. 1998; 51(4) : 281-5.p Abstract: Between January 1995 and March 1997, 78 Helicobacter pylori strains were isolated from patients with gastritis and gastric ulcer and their drug-susceptibilities to 8 antimicrobial agents and 3 anti-ulcer drugs were determined. Imipenem was the most active agent and its MICs to all the strains tested were lower than 0.013 microgram/ml. Amoxicillin, cefaclor and minocycline were active against H. pylori with MIC90s of 0.05 microgram/ml, 0.78 microgram/ml and 0.39 microgram/ml, respectively, and no resistant strains against these drugs were isolated. However, resistant strains to clarithromycin (isolation frequency: 9%), erythromycin (13%), ofloxacin (8%) and metronidazole (13%) were isolated. Triple, double and single resistant strains to above 4 antimicrobial agents were noted. No quadruple resistant strain was isolated. Frequencies of those resistance patterns were 14.3% (triple), 28.6% (double), and 57.1% (single), respectively. Seven erythromycin-resistant strains were shown to be cross-resistant to clarithromycin but 3 erythromycin-resistant strains were susceptible to clarithromycin. It seems likely that this phenomenon is caused by the fact that clarithromycin is more active to H. pylori than erythromycin. The MIC90 value of lansoprazole was lower than those of omeprazole and famotidine.

Nakajima Y. et al. *Chemotherapeutic activity of synthetic antimicrobial peptides: correlation between chemotherapeutic activity and neutrophil-activating activity.* FEBS Lett. 1997; 415(1) : 64-6.p Abstract: The chemotherapeutic activity of three synthetic antibacterial peptides was investigated. KLKLLLLLKLK-NH2 and its D-enantiomer showed significant chemotherapeutic activity in MRSA-infected mice, whereas KLKLLLKLK-NH2, which showed the highest antibacterial activity among them in vitro, was found to have almost no ability to prevent MRSA infection. These results suggest that the antibacterial activity of peptides assessed in vitro does not necessarily correlate with their chemotherapeutic activity. We found that KLKLLLLLK-LK-NH2 and its D-enantiomer, but not KLKLLLKLK-NH2, have the ability to activate human neutrophils to produce superoxide, suggesting that the prevention of MRSA infection by these peptides is not simply due to their direct bactericidal activity but to augmentation of the systemic defense mechanism mediated by neutrophils.

Nakamura A. *[Prevalence of antimicrobial resistance among clinical isolates of Streptococcus pneumoniae in a children's hospital].* Kansenshogaku Zasshi. 1997; 71(5) : 421-9.p Abstract: Eleven hundreds and seventy-six strains of Streptococcus pneumoniae were isolated from pediatric clinics of Chiba Children's Hospital during 1990 through 1995. Annual penicillin-resistant rates of these strains were as follows; 24.0% (1990), 29.0% (1991), 36.2% (1992), 55.8% (1993), 58.6% (1994), and 59.3% (1995). Overall penicillin-resistance during these 6 years was 45.8%. Nine out of 11 cases of systemic pneumococcal infections were due to penicillin-resistant S. pneumoniae (PRSP) during the same period. Of PRSP strains, their PCG-MIC levels had become higher and their spectra of resistance had expanded not only to beta-lactam but also to non-beta-lactam antimicrobials. Although panipenem was the most efficacious antibiotics in this study and was recommended currently to use in the case of pneumococcal meningitis, it should be noted that a strain with high-level MIC (2 micrograms/ml) had emerged in 1995. Close surveillance of pneumococcal antimicrobial susceptibility including panipenem is necessary.

Nakamura Y. *[The blood-born viral infections].* Rinsho Byori. 1998; 46(2) : 107-18.p Abstract: Recently it has become urgent to establish a risk control system against emerging and re-emerging infectious diseases. Many of the emerging and re-emerging infectious diseases such as AIDS and viral hepatitis, are induced by viral infection via blood. The main causative agents of blood-born viral infection are hepatitis B virus (HBV), hepatitis C virus (HCV), human immunodeficiency virus (HIV), human T cell leukemia virus type1 (HTLV1), cytomegalovirus (CMV), Epstein-Barr virus (EBV), and human parvovirus B19. They play the main role in viral hospital infections. The risk of them being transmitted by the transfusion of screened blood is very low, but it is always possible that infection may occur in a window period even after extensive blood screening tests. EBV has been recognized as a less serious infectious agent than CMV. Nowadays, biotechnology has revealed the broad spectrum of EBV related diseases as chronic active EBV infection, compromised lymphoma, gastric carcinoma and other lymphoproliferative disorders. There would be some immunocompromised cases needed monitoring after transfusion/transplantation as same as CMV infection. Double infection or co-infection of EBV and CMV are shown to be occasional. The most important tasks for risk control of hospital acquired infectious diseases are to prevent second drug related AIDS and prion infection due to the transplantation of dura mata derived from patients with Creutzfeldt-Jakob disease, and to prevent of needle stick infections. Therefore it is necessary to establish a network communication between clinical laboratories, institutes and public health organizations for more rapid and adequate care with rapid diagnosis by molecular analysis.

Nakashio S. et al. *[Comparative antimicrobial activity of RP 59,500 (quinupristin-dalfopristin), the first semisynthetic injectable streptgramin, against gram-positive cocci and other recent clinical pathogens].* Jpn J Antibiot. 1997; 50(10) : 844-53.p Abstract: RP 59,500 (Quinupristin-Dalfopristin) is the first semisynthetic injectable streptogramin antimicrobial agent, which is a combination of quinupristin and dalfopristin in a 30:70 ratio. The components of RP 59,500 act synergically to provide bactericidal activity through action at different sites on bacterial ribosomes. In the present study, the antimicrobial activity of RP 59,500 was compared with those of four macrolides (erythromycin, clarithromycin, azithromycin, roxithromycin). Susceptibility testing was carried out by microdilution method on 303 strains of 10 species, especially antibiotic-resistant Gram-positive cocci. RP 59,500 was active against a wide range of Gram-positive cocci including methicillin-resistant Staphylococci and penicillin-resistant Streptococcus pneumoniae. The MICs90 of RP 59,500 against methicillin-resistant Staphylococcus aureus (MRSA) and Staphylococcus epidermidis were both 0.25 microgram/ml, although those of four macrolides were higher than 32 micrograms/ml. The MICs90 of RP 59,500 against penicillin-sensitive, -intermediate and -resistant S. pneumoniae were all 0.5 microgram/ml, although those of four macrolides against penicillin-resistant S. pneumoniae were higher than 32 micrograms/ml. RP 59,500 also exhibited equivalent activities to the four macrolides against strains of Streptococcus pyogenes. Streptococcus agalactiae and Moraxella catarrhalis. RP 59,500 exhibited the highest activities against Enterococcus faecalis, Enterococcus faecium and Enterococcus avium strains which are intrinsically resistant to most antimicrobial agents. No cross-resistance was observed between RP 59,500 and the four macrolides, which will merit attention in future clinical trials of the agent. The effect of human serum on the MIC of RP 59,500 was studied with strains of S. aureus, S. epidermidis and E. faecalis. The presence of 20% (V/V) serum had little or no effect on the MIC, although 50% (V/V) serum increased MICs by 4-8 folds. Laboratory-induced resistance to RP 59,500 occurred in a stepwise fashion in broth cultures of S. aureus, S. epidermidis and E. facalis strains and the induction rate was slow and no more than four fold increases were observed. Population analysis was performed on RP 59,500 and the reference macrolides against S. aureus ATCC 25,923 strain. Although low frequencies (less than 0.01%) of resistant sub-population were detected with EM, CAM, AZM and RXM, no RP 59,500-resistant sub-population was detected in this study.

Nalepa P. et al. *[Severe pneumonia caused by Chlamydia pneumoniae in a patient treated with steroids for bronchial asthma].* Pol Merkuriusz Lek. 1997; 3(16) : 193-5.p Abstract: A case of bilateral severe pneumonia caused by Chlamydia pneumoniae has been described in a female patient with bronchial asthma. Both the clinical course and massive radiological changes, as-well as the fact that pneumonia occurred during the patients hospitalization and the treatment with, among other drugs, prednisone lead to the presumptive diagnosis of hospital acquired pneumonia or tuberculosis. The instituted therapy turned out ineffective. Only when Chlamydia pneumoniae was found in the culture infected by the material from the patient, the appropriate diagnosis could be made. The erythromycin therapy was prescribed which soon resulted in remission od clinical and radiological symptoms.

Namdari H. et al. *Abiotrophia species as a cause of endophthalmitis following cataract extraction.* J Clin Microbiol. 1999; 37(5) : 1564-6.p Abstract: Microorganisms of the genus Abiotrophia, members of the oral flora, are known as important causes of bacterial endocarditis. In this study, we report two individual cases of acute vitreous infection caused by Abiotrophia adiacens and Abiotrophia defectiva approximately a week after cataract extraction. Abiotrophia isolates were recovered by cultivation of vitreous humor on chocolate agar and identified via conventional and API 20 Strep identification systems. An 83-year-old male patient (A) and an 80-year-old female patient (B) demonstrated almost identical symptoms of infectious endophthalmitis manifested as hypopyon and opaque media. The vision of both patients was reduced to detection of hand motion in the left and the right eyes, respectively. An emergency pars plana core vitrectomy was performed, and intraocular antibiotics were administered to each patient, who presented 8 months apart in two different institutions. Patients A and B were treated with an intravitreal injection of vancomycin-amikacin and vancomycin-ceftazidime, respectively, which resulted in complete recovery.

Namias N. et al. *Empiric therapy of sepsis in the surgical intensive care unit with broad-spectrum antibiotics for 72 hours does not lead to the emergence of resistant bacteria.* J Trauma. 1998; 45(5) : 887-91.p Abstract: BACKGROUND: It is our practice to treat suspected sepsis with imipenem/cilastatin and gentamicin (IMP/GENT) for 72 hours while awaiting culture results. We wanted to determine if this practice engenders antimicrobial resistance. METHODS: Review of prospectively collected data regarding use of IMP/GENT and microbial sensitivity to imipenem/cilastatin during the first and last 7 months of a 19-month study period (October 1, 1995, to April 30, 1997). RESULTS: The susceptibility of appropriate organisms to imipenem/cilastatin was 76% in the early period and 80% in the late period ($p = 0.42$). Pseudomonas aeruginosa was more susceptible in the late period (88 vs. 62%; $p = 0.007$). Resistance to gentamicin (30% early vs. 21% late; $p = 0.02$) and representative cephalosporins (cefoxitin, 52% early vs. 61% late; $p = 0.35$; ceftazidime, 26% early vs. 23% late; $p = 0.76$) did not develop during the study period. The incidence of fungemia was the same in both periods (4 of 467 admissions vs. 3 of 599 admissions; $p = 0.48$). CONCLUSION: This protocol did not lead to the emergence of resistant bacteria.

Narcio M.L. et al. *[Microbial etiology of mild and moderate pelvic inflammatory disease].* Ginecol Obstet Mex. 1998; 66 : 309-15.p Abstract: Pelvic inflammatory disease (PID) is one of the most severe complications of sexually transmitted disease (STD). It can be due to the ascending of normal endogenous microorganisms of the female genital tract or the infection by microorganisms related to STD as Chlamydia trachomatis and Neisseria gonorrhoeae. PID leads to serious gynecoobstetric consequences as infertility and ectopic pregnancy. Clinicians face the problem of knowing the ethiology of PID

in order to treat appropriatly patients with this clinical diagnosis. So that, this work pretends to establish what kind of microorganisms are implicated in PID. A proper isolation and identification of microorganisms achieved by culture of lower genital tract samples from endocervix, endometrium and peritoneal fluid, leading to a betther, specific and proper treatment of this disease.

Nascimento A.M. et al. *Re-evaluation of antibiotic and mercury resistance in Escherichia coli populations isolated in 1978 from Amazonian rubber tree tappers and Indians.* Res Microbiol. 1999; 150(6) : 407-11.p Abstract: A study was carried out to assess the stability of antimicrobial susceptibility of wild isolates upon long-term storage using fifty-three Escherichia coli strains isolated in 1978 from feces of healthy children from the Amazon region in Brazil, exposed to low levels of antimicrobial agents, and examined for resistance to mercury and four antibiotics. All of the strains were kept in Lignieres medium at room temperature and were transferred to fresh media four times during this period. Thirty-five out of the 53 strains analyzed in 1978 were viable. Upon recovery, antibiotic and mercury resistance was estimated. All of the 35 strains maintained their original phenotype in a stable fashion, except for one multiresistant strain which became susceptible to kanamycin. Fifty-four percent of the strains exhibited a resistance phenotype, among which 47% had conjugative plasmids.

Nassaralla B.R.A. *Guia para a prevenção fa resistência antimicrobiana em hospitais: artigo comentado.* Rev. patol. trop. 1997; 26(2) : 173-7.p Abstract: A resistência antimicrobiana resulta no aumento da morbidade, mortalidade e custos para o sistema de saúde. Este artigo aborda vários objetivos estratégicos, com passos e avaliações, para garantir o sucesso no controle e prevenção da resistência antimicrobiana em hospitais. Também ressalta a importância dos recursos para outros estudos e novas frentes de pesquisa sobre resistência antimicrobiana, que nos permitam preservar melhor nosso arsenal antimicrobiano no futuro(AU).

Nastasi A. et al. *Antimicrobial resistance in Salmonella enteritidis, southern Italy, 1990-1998.* Emerg Infect Dis. 2000; 6(4) : 401-3.p Abstract: During 1990 to 1998, we identified multidrug-resistant isolates of Salmonella Enteritidis in southern Italy. Plasmids containing class I integrons and codifying for synthesis of extended- spectrum beta-lactamases were detected. Active surveillance for resistance to antimicrobial agents is needed to guard against the possible spread of resistant clones.

Naud P. et al. *Estudo prospectivo controlado comparando lomefloxacina e ampicilina mais probenecide em dose nica oral no tratamento de uretrite gonocócica aguda no homem.* DST j. bras. doenças sex. transm. 1996; 8(4) : 19-23.p Abstract : As infecções gonocócicas há muito constituem um fator de importância para a saúde pública, devido … sua alta prevalência na população. Torna-se, portanto, imperioso a obtenção de tratamentos eficazes e práticos, visando a observância completa do paciente ao tratamento, a cura clínica e a interrupção do ciclo de transmissão. Neste estudo comparou-se lomefloxacina e ampicilina, quanto a sua eficácia clínica, laboratorial e seus efeitos colaterais, administradas em dose única. A lomefloxacina mostrou-se superior quanto … eficácia e apresentou menos efeitos adversos em relação … ampicilina. (AU).

Navarrete-Navarro S. et al. *[Nosocomial infections and quality of health care].* Salud Publica Mex. 1999; 41 Suppl 1 : S64-8.p Abstract: The main objective of a hospital-acquired infections control program is to decrease the risk of acquisition and the morbidity and costs associated. The organization of a team with technical and humanistic leadership is essential. Every infection control program must also develop strategies that allow: a) identification of the problems, b) to establish the importance of each one, c) to determine their causes, d) to develop solutions and e) the evaluation of the recommended solutions. The development of technical and humanistic abilities by the leader and the members of the team, and the use of the tools mentioned above have produced the only validate and highly effective program of quality improvement in the hospital.

Navarro F. et al. *[Evaluation of chromogenic medium CPS ID2 (bioMerieux) in urine cultures (see comments)].* Enferm Infecc Microbiol Clin. 1996; 14(4) : 215-9.p Abstract: BACKGROUND. The aim of the study was to evaluate the chromogenic agar plate CPS ID2 (bioMerieux) and determine its cost-benefit ratio. METHODS. A total of 2,193 urinary sediments were processed. The urine culture was carried out in CPS ID2 agar and in cystine-lactose electrolyte deficient (CLED) agar, when needed. Identification of the microorganisms was performed following standard microbiologic procedures through biochemical tests prepared in our laboratory. The identification, from CPS ID2 agar, by direct detection in medium of four metabolic activities: beta-glucuronidase, beta-glucosidase, deaminase, and indol production, was performed following to manufacturer's instructions. RESULTS. A total of 289 urine cultures were positive, 18 were negative and 34 were contaminated samples. The identification, directly performed from the colonies detected in CPS ID2 agar, was correct in 96% of 166 Escherichia coli, in 92% of 24 Proteus mirabilis and in 97% of 38 enterococci. CPS ID2 agar exhibited 94% and 100% sensitivity and specificity, respectively in E. coli identification, 92% and 100% in P. mirabilis and 97% and 99% in Enterococcus. The use of this new media, CPS ID2, in our laboratory, implies a budgetary increment. However, if commercial galleries are used for routine identification, the cost will be reduced using this new media. CONCLUSIONS. The CPS ID2 agar allows the isolation and direct identification of the most frequent urinary tract pathogens: E. coli, P. mirabilis and Enterococcus in primary isolation medium. Using this medium, bacteriologists will be able to save time and reagents when identifying the most common uropathogens. Furthermore, the use of this medium would reduce costs in some laboratories.

Navarro M. et al. *[Chronic necrotizing pulmonary aspergillosis: infrequent form of aspergillosis].* Enferm Infecc Microbiol Clin. 1998; 16(4) : 175-8.p Abstract: BACKGROUND: Chronic necrotizing pulmonary aspergillosis (CNPA) is a chronic pulmonary infection caused by the genus Aspergillus, which usually involves moderately immunosuppressed patients. METHOD: We describe 3 patients with a toxic syndrome that had lasted several weeks or months, with lung infiltrates in the chest X-ray and the CT scan. Mycobacterium tuberculosis could not be isolated from different respiratory smears (sputum, bronchoaspiration, Barlett catheter and pulmonary punction in the third case). Moreover, there was no response to anaerobic treatment. RESULTS: All 3 patients were moderately immunosuppressed (2 men were COPD and the woman was an asthmatic patient). One of the men was being treated for a nocardiosis. In all three cases, A. fumigatus was isolated from de different respiratory smears. CONCLUSIONS: To diagnose a CPNA, a high degree of clinical suspicion is needed. The differential diagnose should be done with pulmonary tuberculosis and anaerobic infections. The presence of a member of the genus Aspergillus in the tracheobronchial secretions of a patient should not be systematically considered a saprofit, specially when other microorganisms can not be isolated.

Navarro Santos G. et al. *Varicela en el parto: estudio retrospectivo.* Rev. sanid. mil. 1995; 49(5) : 112-4.p Abstract: Se realizó un estudio retrospectivo, clínico y transversal, en el Hospital Central Militar de México, de septiembre de 1990 a mayo de 1994. Encaminado a recopilar los partos complicados con varicela, embarazos complicados con varicela, partos totales y encamados por varicela en este nosocomio. Se encontró que la incidencia de partos complicados con varicela es del 0.033 por ciento, con un promedio de edad de 18.7 años; el cuadro clínico de varicela fue típico y sin complicaciones, no provocó alteraciones durante el trabajo de parto, no requirieron tratamiento especial, excepto aislamiento; todos los productos fueron de término, el 25 por ciento de los productos padecieron varicela con un cuadro clínico común, aún con

tratamiento profiláctico (aciclovir) por ser considerados potencialmente infectados. La distribución de la varicela durante el embarazo fue del 22 por ciento en el primer trimestre, del 40 por ciento en el segundo, del 16 por ciento en el tercero y del 22 por ciento durante el parto(AU).

Navarro V. et al. *Antimicrobial evaluation of some plants used in Mexican traditional medicine for the treatment of infectious diseases.* J Ethnopharmacol. 1996; 53(3) : 143-7.p Abstract: Twelve methanolic plant extracts from botanical species used in traditional medicine in Morelos, Mexico to cure infectious diseases have been subjected to a screening study to detect potential antimicrobial activity against Staphylococcus aureus, Escherichia coli, Pseudomonas aeruginosa and Candida albicans. The antimicrobial activity of the products was evaluated using colonies growing in solid medium, establishing the minimal concentration required to inhibit their in vitro growth (MIC). The results showed that extracts from Eucalyptus globolus Labill, Punica granatum L., Artemisia mexicana Wild., and Bocconia arborea Watt. possess strong in vitro antimicrobial activity against the tested microorganisms.

Navas Pastor J. et al. *[Cystic pyeloureteritis and infection. Presentation forms and review of the literature].* Arch Esp Urol. 2000; 53(1) : 15-20.p Abstract: OBJECTIVE: To present three illustrative cases of pyeloureteritis cystica and review the literature. METHODS: Three illustrative cases diagnosed at our department are described. Patient history, clinical features, diagnostic procedures and treatment are analyzed and the literature is reviewed. RESULTS: Our patients had no specific symptoms. All three patients had urinary tract infection with pyeloureteral involvement, which was bilateral in two cases. One of these patients had a long-indwelling catheter. CONCLUSIONS: Pyeloureteritis cystica is a benign and uncommon condition whose etiology is not well-known. It is generally associated with chronic infection and inflammation, and may be difficult to distinguish from other filling defects of the urinary tract. Due to its benign nature, treatment must always be conservative and close follow-up is recommended.

Navasa M. et al. *Bacterial infections in liver disease.* Semin Liver Dis. 1997; 17(4) : 323-33.p Abstract: Most bacterial infections in cirrhotic patients are hospital-acquired. Urinary tract infections, spontaneous bacterial peritonitis (SBP), respiratory tract infections, and bacteremia are the most frequent bacterial infectious complications seen in cirrhotic patients. SBP is the most characteristic infectious complication of cirrhotic patients, and it is defined as the infection of a previously sterile ascitic fluid, with no apparent intra-abdominal source of infection. The incidence of SBP in cirrhotic patients admitted to hospital with ascites has been estimated to range between 7 and 23%. The diagnosis is established on the basis of clinical signs and symptoms and/or a polymorphonuclear cell count in ascitic fluid higher than 250/mm3. This diagnosis is confirmed by a positive culture in approximately 70% of the cases. The remaining 30% are considered culture-negative SBP but are empirically treated with antibiotics because severe peritonitis and death may follow if these patients are not treated. Early diagnosis, the routine use of diagnostic paracentesis in patients admitted to hospital with ascites, and, especially, the use of adequate antibiotics are very important tools in the treatment of SBP. Third-generation cephalosporins are the first-choice antibiotic treatment in SBP, although selected patients with SBP, those with normal renal function and without hepatic encephalopathy, shock, or gastrointestinal bleeding, may be treated with oral quinolones. Selective intestinal decontamination with norfloxacin is safe and useful in the primary and secondary prophylaxis of SBP, although the incidence of quinolone-resistant organisms is increasing and this may be a problem in the future.

Navia M.M. et al. *Typing and characterization of mechanisms of resistance of Shigella spp. isolated from feces of children under 5 years of age from Ifakara, Tanzania.* J Clin Microbiol. 1999; 37(10) : 3113-7.p Abstract: Eighty-six strains of Shigella spp. were isolated during the dry season from stool samples of children under 5 years of age in Ifakara, Tanzania. The epidemiological relationship as well as the antimicrobial susceptibility and mechanisms of resistance to ampicillin, chloramphenicol, and co-trimoxazole were investigated. Four different epidemiological tools, pulsed-field gel electrophoresis (PFGE), repetitive extragenic palindromic (REP)-PCR, plasmid analysis, and antibiogram, were compared for typing Shigella strains. Seventy-eight (90%) strains were Shigella flexneri and were distributed into four groups, by either PFGE or REP-PCR, with 51, 17, 7, and 3 strains. The four strains of Shigella dysenteriae belonged to the same group, and the four strains of Shigella sonnei were distributed in two groups with three and one strain each. Plasmid analysis showed a high level of heterogeneity among strains belonging to the same PFGE group, while the antibiogram was less discriminative. REP-PCR provided an alternative, rapid, powerful genotyping method for Shigella spp. Overall, antimicrobial susceptibility testing showed a high level of resistance to ampicillin (81.8%), chloramphenicol (72.7%), tetracycline (96.9%), and co-trimoxazole (87.9%). Ampicillin resistance was related to an integron-borne OXA-1-type beta-lactamase in 85.1% of the cases and to a TEM-1-type beta-lactamase in the remaining 14.8%. Resistance to co-trimoxazole was due to the presence of a dhfr Ia gene in all groups except one of S. flexneri, where a dhfr VII gene was found within an integron. Chloramphenicol resistance was associated in every case with positive chloramphenicol acetyltransferase activity. All strains were susceptible to nalidixic acid, ciprofloxacin, ceftazidime, cefotaxime, and cefoxitin. Therefore, these antimicrobial agents may be good alternatives for the treatment of diarrhea caused by Shigella in Tanzania.

Ndip R.N. et al. *Antibiogram of bacterial isolates from cases of otitis media and lower respiratory tract infections.* Afr J Med Med Sci. 1995; 24(4) : 353-7.p Abstract: A total of one hundred and two cases of otitis media were screened for the isolation of bacterial flora of ears. Out of this, Staphylococcus aureus, Streptococcus pneumoniae and Haemophilus influenzae accounting for 41.2%, 25.5% and 13.3% respectively were isolated. A further two hundred and four sputum samples from cases of lower respiratory tract infections were screened. Moraxella catarrhalis, S. aureus, S. pneumoniae and H. influenzae constituting 20.9%, 37%, 30% and 21% were isolated in that order. Thirty-one point seven percent of the Moraxella catarrhalis isolates were beta-lactamase positive. Beta-lactamase M. catarrhalis were resistant to penicillin and ampicillin while the non-beta-lactamase producers were sensitive to these antimicrobial agents. However, both beta-lactamase producers and non-producers were resistant to trimethoprim but sensitive to erythromycin, tetracycline and amoxycillin. Staphylococcus aureus, S. pneumoniae and H. influenzae was also sensitive to penicillin while S. pneumoniae was also sensitive to erythromycin and H. influenzae to chloramphenicol.

Nelson A.L. et al. *Transrectal ultrasonographically guided drainage of gynecologic pelvic abscesses.* Am J Obstet Gynecol. 2000; 182(6) : 1382-8.p Abstract: OBJECTIVE: This study assessed the feasibility of ultrasonographically guided transrectal aspiration of gynecologic pelvic abscesses to treat patients for whom intravenous antibiotic therapies failed and whose abscesses were not optimally amenable to colpotomy drainage or transabdominal or transvaginal ultrasonographically guided aspiration. Study Design: This was a retrospective review of the first 15 women with pelvic abscesses that resulted from salpingitis or complications of gynecologic surgery who underwent transrectal pelvic abscess drainage after failure of antibiotic therapy. RESULTS: Purulent material was aspirated from the abscesses in 14 of the 15 women. All 14 women with aspirated material were successfully treated with real-time ultrasonographically guided transrectal drainage; only 4 of the 14 had indwelling catheter placement. CONCLUSION: Ultrasonographically guided transrectal drainage of gynecologic pelvic abscesses is a safe and effective treatment of pelvic abscesses for women who do not have an adequate response

to antibiotic therapy.

Nelson R.R. *Intrinsically vancomycin-resistant gram-positive organisms: clinical relevance and implications for infection control.* J Hosp Infect. 1999; 42(4) : 275-82.p Abstract: Intrinsic resistance to vancomycin in gram-positive bacteria presumably predates acquired vancomycin resistance in enterococci but it has only recently generated interest. Intrinsically resistant enterococci possessing the vanC gene and the non-enterococcal genera Leuconostoc, Lactobacillus, Pediococcus and Erysipelothrix are known to cause human infection. This review examines the available data on their identification, resistance mechanisms, epidemiology, clinical infections and antimicrobial susceptibility. Intrinsically vancomycin-resistant gram-positives are usually opportunistic pathogens. Although serious infections may occur, treatment options remain available. No additional infection control measures for the intrinsically resistant genera appear justified with currently available evidence, although vigilance should be maintained to detect future changes in susceptibility patterns.

Nema S. et al. *Emerging bacterial drug resistance in hospital practice.* Indian J Med Sci. 1997; 51(8) : 275-80.p Abstract: The growing multiple drug resistance among bacteria in hospital practice is posing a serious threat to the successful antimicrobial therapy. Our data on the bacterial drug resistance at a tertiary care centre during 1995-1996 has been alarming with an incidence of 73 to 99% resistance to the common antibiotics like ampicillin, chloramphenicol, cotrimoxazole and first generation cephalosporins among the gram negative isolates. The resistance to gentamicin and ciprofloxacin ranged from 53 to 79%. Resistance to amikacin, netilmicin and the third generation cephalosporins ranged from 30 to 73%. The frightening observation was the emergence of resistant isolates which were sensitive only to two drugs, sensitive only to one drug and resistant to all the available antibiotics (2.64, 17.6 and 11.5% respectively) during 1994 to 1996. Resistance among the gram positive bacteria was much less but the increase in methicillin resistant Staphylococci (52-65%) was a serious matter. The data were an eye opener and the infection control measures could bring marginal improvement in the situation in 1996. It is vehemently appealed that the national antibiotic policies be formed and be stringently implemented before we are thrown back to the pre-antibiotic era.

Nemet K. et al. *[Chronic granulomatous disease (CGD): dysfunction of the neutrophil granulocyte NADPH-oxidase enzyme system].* Orv Hetil. 1997; 138(7) : 397-401.p Abstract: Dysfunction of NADPH oxidase results in chronic granulomatous disease (CGD), a syndrome characterized by severe bacterial and fungal infections. Phagocytes of the patients are unable to kill ingested microorganisms which leads to the formation of granulomas and abscesses. Predominant pathogens are the catalase-positive bacteriae (Staphylococcus aureus) and some fungi (Aspergillus species). Infections of these patients should be treated by antimicrobial agents, which penetrate cells and kill pathogens inside. The aim of this study was to give a short description of the structure and function of the NADPH oxidase enzyme and to summarize the results obtained during the diagnostic of 10 patients with chronic granulomatous disease. Characterization of the disease was confirmed by mutation analyses.

Neth O. et al. *Mannose-binding lectin binds to a range of clinically relevant microorganisms and promotes complement deposition.* Infect Immun. 2000; 68(2) : 688-93.p Abstract: Mannose-binding lectin (MBL) is a collagenous serum lectin believed to be of importance in innate immunity. Genetically determined low levels of the protein are known to predispose to infections. In this study the binding of purified MBL to pathogens isolated from immunocompromised children was investigated by flow cytometry. Diverse Candida species, Aspergillus fumigatus, Staphylococcus aureus, and beta-hemolytic group A streptococci exhibited strong binding of MBL, whereas Escherichia coli, Klebsiella species, and Haemophilus influenzae type b were characterized by heterogeneous binding patterns. In contrast, beta-hemolytic group B streptococci, Streptococcus pneumoniae, and Staphylococcus epidermidis showed low levels of binding. Bound MBL was able to promote C4 deposition in a concentration-dependent manner. We conclude that MBL may be of importance in first-line immune defense against several important pathogens.

Neu H.C. *Emergence and mechanisms of bacterial resistance in surgical infections.* Am J Surg. 1995; 169(5A Suppl) : 13S-20S.p Abstract: Antimicrobial resistance is commonplace among bacteria involved in surgical infections, including Staphylococcus aureus, enterococci, Escherichia coli, Klebsiella pneumoniae, Enterobacter cloacae, and Bacteroides species. Resistance traits can be encoded on chromosomes or transmissible plasmids. The basic mechanisms of resistance are alteration of drug target, prevention of drug access to target, and drug inactivation. Examples include alteration of penicillin-binding proteins in resistance to penicillinase-resistant penicillins, ribosomal binding site protection in tetracycline resistance, and beta-lactamase destruction of beta-lactam compounds. Resistance due to the many types of beta-lactamases that have thus far been identified is widespread among common pathogens; use of beta-lactam/beta-lactamase inhibitor combinations has proved effective as one means of counteracting such resistance. Contending with resistance involves appropriate use of available antimicrobials, development of novel agents or modification of existing agents, and measures to forestall emergence and spread of resistant organisms.

Neu J. et al. *Enteral glutamine supplementation for very low birth weight infants decreases morbidity.* J Pediatr. 1997; 131(5) : 691-9.p Abstract: Glutamine, described as a "conditionally essential" amino acid for critically ill patients, has not been routinely added to parenteral amino acid formulations for critically ill neonates and is provided in only small quantities by the enteral route when enteral intake is low. We conducted a blinded, randomized study of enteral glutamine supplementation in 68 very low birth weight neonates randomly assigned to receive glutamine-supplemented premature formula versus premature formula alone between days 3 and 30 of life. Primary end points consisted of hospital-acquired sepsis, tolerance to subsequent enteral feedings (days with no oral intake), and duration of hospital stay. Hospital acquired sepsis was 30% (control group) and 11% (glutamine group). Logistic regression with birth weight as a covariate showed that: (1) feeding group was significant ($p = 0.048$) in determining the probability of developing proven sepsis over the course of hospitalization and (2) the estimated odds of developing sepsis were 3.8 times higher for infants in the control group than for those treated with glutamine. Glutamine-supplemented infants had better tolerance to enteral feedings as measured by percent of days on which feedings needed to be withheld (mean percentage of 8.8 vs 23.8, $p = 0.007$). Analysis of T cells demonstrated a blunting of the rise in HLA-DR+ and CD16 subsets in glutamine-supplemented infants. There were no differences in growth; in serum ammonia, urea, liver transaminase, or prealbumin concentrations; or in mean hospital stay. This study provides evidence for decreased morbidity in very-low-birth-weight neonates who receive enteral glutamine supplementation.

Neuer A. et al. *[Bacteriological findings in patients with cervical intra-epithelial neoplasia].* Zentralbl Gynakol. 1995; 117(8) : 435-8.p Abstract: In order to evaluate the cervical flora in patients with histologically confirmed cervical intraepithelial neoplasia (grades I to III) the microbiologic results of 216 patients with CIN were compared with those of 100 symptom free controls. Gardnerella vaginalis combined with Mykoplasma spp. and Bacteroides spp. were found in 22% of the patients with dysplasia and in 5% of the control group. The difference was significant ($p < 0.004$). Microorganisms causing sexually transmitted diseases like Neisseria gonoroheae and Trichomonas vaginalis were not found. Chlamydia trachomatis was detected in 5% of all CIN groups. Comparing patients with CIN I, CIN II and CIN III, we did not notice any difference in their bacterial flora, wet smear or smell test. However the results of this study indicate that

women with cervical dysplasia may have a higher prevalence of an altered cervical flora in comparison to controls.

Neumann F.J. et al. *Previous cytomegalovirus infection and risk of coronary thrombotic events after stent placement*. Circulation. 2000; 101(1) : 11-3.p Abstract: BACKGROUND: Cytomegalovirus (CMV) infection induces upregulation of tissue factor and loss of anticoagulants, including thrombomodulin, prostacyclin, and tissue plasminogen activator. CMV infection may thereby increase the procoagulant properties of coronary artery plaques. This prospective study investigated the effect of previous CMV infection on the early hazard of coronary stent placement. METHODS AND RESULTS: In 551 consecutive patients with successful coronary stent placement, we determined CMV IgG titers. The end point was the composite rate of death, nonfatal Q-wave myocardial infarction, and urgent reintervention during 30-day follow-up. The study population represented the entire spectrum of coronary stenting; an acute coronary syndrome was present in 50% of the patients. A positive CMV IgG titer (>/=1/230) was found in 340 patients (62%). Of these, 10 reached the end point during 30-day follow-up (2 deaths, 4 infarctions, 4 urgent reinterventions). In the group with negative CMV titer, thrombotic events did not occur (P=0.014 versus group with positive CMV titers). After correction for pertinent covariables, a significant relation between positive CMV titer and the 30-day end point prevailed (P<0.001). CONCLUSIONS: Previous CMV infection may increase the risk of coronary thrombotic events after stent placement.

Nevot Falco S. et al. *[Prevention and treatment of opportunistic infections]*. Allergol Immunopathol (Madr). 1998; 26(3) : 144-50.p Abstract: An opportunist infection (OI) is understood to be an infection produced by microorganisms that invade a host with impaired immune capacity, such as children with HIV infection. The adequate treatment and chemoprophylaxis of these infections has improved the prognosis of their evolution, although they still present a high morbidity and mortality when they occur. In this sense, the introduction of triple therapy (new antiretroviral inhibitors and protease inhibitors) is likely to produce a prompt decrease in the incidence of OI because of the regression in the degree of immunosuppression that it induces. The degree of immunosuppression is determined by the number of CD4 lymphocytes, the most reliable marker for assessment. Normal CD4 lymphocytes values are different for each age group and have important connotations for the prophylactic measures to be used at each moment depending on the CD4 lymphocyte count. Opportunist infections influence the quality of life of patients. More than 100 microorganisms, including bacteria, viruses, fungi and protozoa, cause OI. This paper describes primary and secondary prophylaxis as well as the treatment of the most frequent opportunist infections (Pneumocystis carinii pneumonia, bacterial infections, Cryptococcus neoformans, Cytomegalovirus, Herpes simple, Varicella-zoster virus. Toxoplasmosis, Mycobacterium tuberculosis, M. avium-intracellulare, M. kansasii).

Newton G.L. et al. *Distribution of thiols in microorganisms: mycothiol is a major thiol in most actinomycetes.* J Bacteriol. 1996; 178(7) : 1990-5.p Abstract: Mycothiol [2-(N-acetylcysteinyl)amido-2-deoxy-alpha-D-glucopyranosyl- (1—>1)-myo-inositol] (MSH) has recently been identified as a major thiol in a number of actinomycetes (S. Sakuda, Z.-Y. Zhou, and Y. Yamada, Biosci. Biotech. Biochem. 58:1347-1348, 1994; H. S. C. Spies and D. J. Steenkamp, Eur. J. Biochem. 224:203-213, 1994; and G. L. Newton, C. A. Bewley, T. J. Dwyer, R. Horn, Y. Aharonowitz, G. Cohen, J. Davies, D. J. Faulkner, and R. C. Fahey, Eur. J. Biochem. 230:821-825, 1995). Since this novel thiol is more resistant than glutathione to heavy-metal ion-catalyzed oxidation, it seems likely to be the antioxidant thiol used by aerobic gram-positive bacteria that do not produce glutathione (GSH). In the present study we sought to define the spectrum of organisms that produce MSH. GSH was absent in all actinomycetes and some of the other gram-positive bacteria studied. Surprisingly, the streptococci and enterococci contained GSH, and some strains appeared to synthesize it rather than import it from the growth medium. MSH was found at significant levels in most actinomycetes examined. Among the actinobacteria four Micrococcus species produced MSH, but MSH was not found in representatives of the Arthrobacter, Agromyces, or Actinomyces genera. Of the nocardioforms examined, Nocardia, Rhodococcus, and Mycobacteria spp. all produced MSH. In addition to the established production of MSH by streptomycetes, we found that Micromonospora, Actinomadura, and Nocardiopsis spp. also synthesized MSH. Mycothiol production was not detected in Propionibacterium acnes or in representative species of the Listeria, Staphylococcus, Streptococcus, Enterococcus, Bacillus, and Clostridium genera. Examination of representatives of the cyanobacteria, purple bacteria, and spirochetes also gave negative results, as did tests of rat liver, bonito, Candida albicans, Neurospora crassa, and spinach leaves. The results, which indicate that MSH production is restricted to the actinomycetes, could have significant implications for the detection and treatment of infections with actinomycetes, especially those caused by mycobacteria.

Ng L.K. et al. *Genetic characterization of antimicrobial resistance in Canadian isolates of Salmonella serovar Typhimurium DT104.* Antimicrob Agents Chemother. 1999; 43(12) : 3018-21.p Abstract: PCR was used to identify antibiotic resistance determinants in 31 Canadian Salmonella serovar Typhimurium DT104 isolates. Genes encoding resistance to ampicillin (pse1 or blaP1), chloramphenicol (pasppflo-like), streptomycin-spectinomycin (aadA2), sulfonamide (sulI), and tetracycline [tet(G)] were mapped to a 13-kb region of DNA of one isolate. Two copies of sulI were identified and mapped to the 3' end of either pse1 or aadA2 integrons. The two integrons were separated by the pasppflo-like gene and the tet(G) gene. The kanamycin resistance determinant (aphA-1) was present on a 2.0-MDa plasmid (five isolates) or on the chromosome (three isolates).

Ngo L. et al. *Application of exponential smoothing for nosocomial infection surveillance.* Am J Epidemiol. 1996; 143(6) : 637-47.p Abstract: Detection of outbreaks of infection or increases in bacterial resistance to antimicrobial agents is an essential component of hospital infection control surveillance. The authors applied the method of exponential smoothing to microbiology data from 1987-1992 to investigate a suspected outbreak of gentamicin resistance among Pseudomonas aeruginosa bacteria at the Department of Veterans Affairs Medical Center, San Francisco, California, in 1991-1992. The years 1987-1990 were used to develop the baseline for the forecast model. Application of the model indicated that two observed prominent peaks in the annual cumulative incidence of gentamicin-resistant P. aeruginosa were within the upper bounds of their respective 95% confidence intervals as estimated by the forecast model—i.e., that no epidemic was in progress. This prediction was supported by investigations by the hospital's infection control team which indicated that the apparent increases were due to readmission of patients previously known to harbor these organisms. In contrast, application of a typically employed method that ignores the time series data structure indicated that there were 6 months in which incidence rates exceeded the upper bounds of their respective 95% confidence intervals, thereby erroneously suggesting that an epidemic was in progress. Recursive algorithms and some simplifying assumptions that do not affect the validity of inferences make the application of this method practical for nosocomial infection control programs.

Nguema P.N. et al. *[Severely burned patients: epidemiology and treatment (a study of 104 Gabonese cases)]*. Sante. 2000; 10(1) : 37-42.p Abstract: This retrospective study was carried out over five years (August 1993 to August 1998) and included 104 patients admitted to the intensive care unit for heat-induced or electrical burns affecting more than 10% of their total body surface area. Most of the patients were children or young adults and the mean age of the group was 24 years. Seventy-eight of the patients were the victims of domestic fires. The other 26 cases involved work-related burns and car accidents. Most of the burns observed were caused by fire or scalding, but there were

also two cases of electrical burns. Lesions affected predominantly the head (45.1%), upper limbs (31.5%) and perineum (5.8%). Hemodynamic rescuscitation and intensive respiratory care were administered initially, along with topical surgical treatment. Triple antibiotic treatment was also given immediately in cases of shock or burns to the body's natural orifices. If triple antibiotic treatment was not administered immediately then, within six hours of the burn, treatment was given to prevent infection with Staphylococcus aureus and soil-borne microorganisms and anti-tetanus vaccination was adminstered systematically. The treatment was then modified to prevent infection with Gram-negative bacilli, common second-stage microoganisms. The bacteria most frequently isolated, particularly from the skin and urine, were Pseudomonas (52%), Escherichia coli (37.5%) and Staphylococcus aureus (10.5%). Enteral and parenteral nutrition was begun as soon as possible. The presence of the patient's family during care and rehabilitation was of great psychological benefit to the patients. The mean duration of hospital stay was 12 days. In those cases in which the patient died, early death (within one week) was due to respiratory distress and hydroelectrolytic problems whereas deaths after the first week were due to septic shock. The overall death rate was 54.8%. Prevention should be taught, with particular emphasis on those at high risk.

Nguyen M.H. et al. *Antimicrobial resistance and clinical outcome of Bacteroides bacteremia: findings of a multicenter prospective observational trial*. Clin Infect Dis. 2000; 30(6) : 870-6.p Abstract: There is debate regarding the correlation between in vitro susceptibility testing and clinical response to therapy for Bacteroides bacteremia. We conducted a prospective multicenter observational study of 128 patients with bacteroides bacteremia. Outcome was correlated with results of in vitro susceptibility testing of Bacteroides isolates recovered from blood and/or nonblood sites, determined with use of 3 end points: mortality at 30 days, clinical response (cure vs. failure), and microbiological response (eradication vs. persistence). The mortality rate among patients who received inactive therapy (45%) was higher than among patients who received active therapy (16%; P=.04). Clinical failure (82%) and microbiological persistence (42%) were higher for patients who received inactive therapy than for patients who received active therapy (22% and 12%, respectively; P=.0002 and.06, respectively). In vitro activity of agents directed at Bacteroides species reliably predicts outcome: the specificity was 97%, and positive predictive value was 82%. Antimicrobial susceptibility testing may be indicated for patients whose blood specimens yield Bacteroides species.

Nguyen-Van-Tam S.E. et al. *Risk factors for hospital-acquired urinary tract infection in a large English teaching hospital: a case-control study.* Infection. 1999; 27(3) : 192-7.p Abstract: About 10% of patients in hospital develop a hospital-acquired infection (HAI); the most commonly affected site is the urinary tract. Many studies have examined risk factors for HAI but few have adjusted for confounding and interaction. We performed a prospective case-control study on six acute wards of a busy English teaching hospital to assess risk factors for hospital-acquired urinary tract infection (HAUTI). Over a 2-year period, 136 cases were identified (2.8% of all patient episodes) along with 408 controls. Multiple logistic regression revealed that female sex, increased length of stay, elective admission, surgical operation, and transurethral and repeated intermittent catheterization were all significant independent risk factors for HAUTI. However, specialty of admission was also a significant risk factor when added to the model and, under these conditions, only length of stay and catheterization also remained significant. We detected significant interactions suggesting that the risk of HAUTI is maximal among women undergoing elective surgery, especially those who are catheterized; however, the overall risk of HAUTI among patients admitted electively was greater than for patients admitted as emergencies.

Nichols R.L. et al. *Management of bacterial complications in critically ill patients: surgical wound and catheter-related infections.* Diagn Microbiol Infect Dis. 1999; 33(2) : 121-30.p Abstract: The occurrence of surgical wound infections and/or bacteremia associated with central venous catheter use are of growing concern to all physicians who treat critically ill patients. The physician must be aware that some patients have an even greater risk for infection, such as those with multiple risk factors, those who are on central lines, or those patients who undergo multiple invasive diagnostic or therapeutic procedures. The emergence of resistant pathogens, particularly Gram-positive pathogens, is an important factor in the morbidity and mortality of hospitalized patients. In the face of this growing resistance among target organisms, the selection of the correct antimicrobial and nonpharmacologic interventions, based on correct identification and susceptibility test data, has become increasingly challenging. Methicillin-resistant Staphylococcus aureus and, more recently, glycopeptide-resistant enterococci and staphylococci represent a significant danger to the patient. As a consequence, earlier and more precise identification of the pathogens most frequently associated with infection is essential. The role of exacting surgical technique, infection control measures, and the appropriate use of prophylactic and therapeutic antibiotics cannot be overestimated in helping to reduce potential morbidity and mortality associated with severe surgical infection. The development of new antibiotics may help treat the difficult cases attributable to resistant Gram-positive bacteria.

Nicolau D.P. *The challenge of prescribing treatment for respiratory tract infections.* Am J Manag Care. 2000; 6(8 Suppl) : S419-26.p Abstract: In the treatment of respiratory infections, good clinical and economic outcomes depend on the patient, the pathogen, and the therapeutic protocol. Of these, treatment is the only area in which a clinician can exert control, but selecting the optimal therapy can be very challenging. When choosing a therapy, clinicians should consider the pharmacodynamics of each antibiotic. This may be helpful as calculations of optimal drug exposure based on ratio of pharmacodynamic variables appear to correlate with clinical outcome. Although many current therapies are effective in the treatment of respiratory infections, several factors, such as the development of more severe illnesses, increasing antimicrobial resistance, and a growing awareness of the role of atypical pathogens, are leading many clinicians to prescribe new, more potent antibiotic therapy.

Nicoletti G. et al. *Enterococci: susceptibility patterns and therapeutic options.* Eur J Clin Microbiol Infect Dis. 1995; 14 Suppl 1 : S33-7.p Abstract: Enterococci do not possess the common virulence factors found in many other bacteria, but they have a number of other characteristics which make them particularly pathogenic. These organisms are intrinsically resistant to a number of antimicrobial agents, including beta-lactams (penicillins and cephalosporins), polymyxins and the lincosamides. They are also tolerant to the bactericidal activity of penicillins and glycopeptides, and some of the group have acquired resistance to a number of other clinically important antimicrobial agents including ampicillin, aminoglycosides, chloramphenicol and erythromycin. Numerous national and international studies have demonstrated the changes in the antibiotic resistance of enterococci. Many strains now exhibit multiple drug resistance, the most important being high-level resistance to streptomycin and gentamicin. Organisms exhibiting this high-level resistance are usually resistant to all synergistic combinations of beta-lactam antibiotics and aminoglycosides. Ampicillin-resistant strains are now emerging, some of which are beta-lactamase producers. While resistance to glycopeptides remains rare, it is increasing dramatically in many areas of the world. As nosocomial isolates of enterococci have displayed resistance to essentially every useful antimicrobial agent, it is likely to become increasingly difficult to treat and control enterococcal infections. The glycopeptide antibiotics vancomycin and, particularly, teicoplanin are the only alternatives currently available. Although a bactericidal combination of antibiotics appears necessary only in endocarditis and meningitis and although knowledge of the prevalence of resistant strains can be used to guide the selection of appropriate therapy, optimal regimens for the treatment of infections

caused by multiresistant strains have yet to be determined.(ABSTRACT TRUNCATED AT 250 WORDS).

Nicolle L.E. *Pivmecillinam for the treatment of acute uncomplicated urinary infection*. Int J Clin Pract. 1999; 53(8) : 612-7.p Abstract: Pivmecillinam is a beta-lactam antimicrobial marketed almost two decades ago. It has been used widely for the treatment of acute cystitis in selected areas of the world, particularly in Scandinavia. With increasing resistance of community Escherichia coli isolates to trimethoprim and trimethoprim/sulphamethoxazole, as previously observed for ampicillin and sulphonamides, reassessment of empiric antimicrobial regimens for acute uncomplicated urinary infection is necessary. Thus, it is timely to revisit the role of pivmecillinam for the treatment of acute cystitis. Clinical studies document the efficacy of this antimicrobial with short course therapy for acute cystitis, and clinical practice in countries where it has been used for many years confirms its efficacy and tolerability. If this agent were more widely used for empiric treatment for acute cystitis, use of antimicrobials such as the quinolones might be avoided. Further trials to define the comparative efficacy of pivmecillinam with other antimicrobials, and further studies of community resistance in E. coli isolates to this agent are needed.

Niederman M.S. *Guidelines for the management of respiratory infection: why do we need them, how should they be developed, and can they be useful?* Curr Opin Pulm Med. 1996; 2(3) : 161-5.p Abstract: The management of respiratory infections is a complex and dynamic process, with many areas of controversy and numerous unresolved questions. In an apparent effort to deal with these issues, guidelines for care are being developed for a variety of infections including bronchitis, community-acquired pneumonia, hospital-acquired pneumonia, tuberculosis, HIV infection, and viral illness in immune-compromised patients. As the era of managed care approaches, guidelines will continue to emerge, and several questions about their utility must be answered. In this discussion, the rationale for the popularity of guidelines is examined, along with a review of the processes by which they are developed. Although evidence-based medicine has been suggested as a basis for this process, there are several problems with this approach. Most importantly, evidence-based medicine does not adequately allow for the incorporation of local experience, which is so vital in the management of respiratory infection because of the variability in bacteriology and antimicrobial susceptibilities in different practice settings. If a guideline is developed by a consensus of experts, and viewed as an hypothesis that can be modified based on local data collection, then it can be very useful and can lead to a number of potential benefits for patients with respiratory tract infection.

Nightingale C.H. et al. *Pharmacodynamics and pharmacokinetics of levofloxacin*. Chemotherapy. 2000; 46 Suppl 1 : 6-14.p Abstract: Principles of antibiotic pharmacodynamics include factors that are important for effective eradication of bacteria as well as the suppression of resistance. For effective eradication of bacteria and a good clinical outcome, a ratio for the area under the plasma concentration-time curve relative to the minimum inhibitory concentration (AUC/MIC) of greater than 100 is needed for gram-negative organisms, and a level of greater than 30 is required for gram-positive organisms. Pharmacodynamic principles can also be used to devise the optimal administration regimen for specific antimicrobial agents. Pharmacodynamic analysis of the activity of levofloxacin against Streptococcus pneumoniae revealed that, 99% of the time, actual hospitalized patients achieve an AUC/MIC of greater than 30. This indicates that levofloxacin will be very effective in treating S. pneumoniae infections in the majority of patients. Cost of treatment is an increasing concern voiced by healthcare providers and users alike. This has led to a much greater emphasis placed upon the cost of individual drugs used in the management of infections. However, when evaluating the cost of an antibiotic, it is extremely important that not only are the direct acquisition costs assessed, but consideration also given to other aspects incurring a financial burden, such as drug preparation cost, supplies, costs of treating adverse events or any treatment failures. It is only by having such a full assessment of costs that realistic financial comparisons can be made between different antibiotics.

Nikodemski T. *[Bacteriologic and clinical analysis of nosocomial infections in patients from the intensive care unit]*. Ann Acad Med Stetin. 1999; 45 : 211-26.p Abstract: The aim of this study is to evaluate what pathogens are mainly responsible for infection among all hospitalised at our ITU patients, to define the influence of antibiotic use on the aetiology of nosocomial infection. The research was conducted on a six-bedded surgical ITU in a 700-bed teaching hospital from January 1995 till June 1996. In August 1995 we changed infection control protocols (more stress on: handwashing with antiseptic soaps and routine microbiological culture for early prediction of infection) and antibiotic guidelines on our ITU (third generation cephalosporins, fluoroquinolones and Vancomycin were used only as the last option and never in prevention). 1276 samples for microbiological culture were obtained in routine manner. From 60% positive cultures 1216 strains were isolated (Tab. 1) and resistance to antibiotics were defined (Tab. 3). Monthly antibiotic consumption was expressed in defined daily dose (DDD) for 1000 hospitalisation-days. DDD = (X/Y)/Z x x 1000, were: X-cumulative antibiotic consumption during analysed period (g), Y-standard daily dose (g/24 h), Z-number of hospitalisation-days during analysed period (Tab. 2). Values were expressed as the mean +/- standard error (SE). Relationships between variables were analysed using linear correlation. All data were categorised for the frequency table. Statistically significant differences were considered to exist when calculated p values were less than 0.05. There were no statistically significant differences in the number of treated patients, length of stay and mortality rate on our ITU in 18 months. 58% of isolated strains were Gram-negative bacteria especially Pseudomonas aeruginosa (22%) and Acinetobacter spp. (16%) and Proteus spp. (9%). The commonly isolated Gram-positive bacteria were Enterococcus faecalis (14%), Staphylococcus aureus (12%)—of which 90% were MRSA. In 8% of cases we have isolated Candida spp. Monthly antibiotic consumption was displayed in table 2. Trend analysis confirmed reduction in Ofloxacin, fluoroquinolones and Colistin consumption over 18 months period (Fig. 2). We observed statistically significant decrease in amount of isolated Proteus spp. strains from 70 in I'95 to 31 in II'95 ($p < 0.05$) and 10 in I'96 ($p < 0.005$). This observation was confirmed in trend analysis (Fig. 1). We have observed in analysed period improvement in activities of third generation cephalosporins and fluoroquinolones (Tab. 3). We have analysed the influence of antibiotic use on the aetiology of nosocomial infection. Table 4 shows statistically significant correlation between Acinetobacter spp., MRSA, MRSE isolates and antibiotics consumption. Crosstabulated variables analyses confirm MRSE outbreaks in periods when excessive amount of Amikacin ($p < 0.05$ for chi 2 test, D Somer rate 0.59, V Cramer rate 0.67), aminoglicosides ($p < 0.05$ for chi 2 test, D Somer rate 0.57, V Cramer rate 0.59), imipenem ($p < 0.05$ for chi 2 test, D Somer rate 0.44, V Cramer rate 0.60) and total antibiotics consumption were high ($p < 0.005$ for chi 2 test, D Somer rate 0.67, V Cramer rate 0.81) (Fig. 3). This study illustrates the influence of antimicrobial therapy on the species and the resistance of strains isolated in nosocomial infection. Restrictive antibiotics policy does not affect ITU outcome. Better strategies for antibiotic administration in the ITU setting may improve their efficacy and control the spread of nosocomial infection caused by multi-resistant organisms. Therefore, restrictive antibiotic policy would be mandatory in each hospital and department.

Nikolaeva I.V. et al. *[The frequency of staphylococcal colonization of the intestines in children with the manifestations of dysbacteriosis]*. Zh Mikrobiol Epidemiol Immunobiol. 2000; (1) : 17-21.p Abstract: In 2100 children of different age groups the microbiocenosis of the large intestine was studied. The study revealed that the colonization of the

mucous membrane of the large intestine with staphylococci developed in 30% of children with intestinal dysbacteriosis. Young children were mainly affected (91%). The prevailing species among isolated staphylococci was S. aureus (86%), capable of persistence in the intestine (30.9%). In children non typing S. aureus strains mainly circulated (70%), and among phage-typing strains isolates of phage group III prevailed (70.2%). The colonization of the intestine with coagulase-negative staphylococci was possible (14%). Microecological intestinal disturbances in children of different age groups were characterized by different degrees of changes in normal microflora with the prevalence of opportunistic microorganisms in the microbial picture.

Niroomand F. et al. *Fate of bacterial pathogens and indicator organisms in liquid sweeteners.* J Food Prot. 1998; 61(3) : 295-9.p Abstract: The survival of pathogenic and indicator microorganisms in liquid sweeteners was studied. Seven sweeteners—liquid sucrose, 42% high-fructose corn syrup (HFCS), 55% HFCS, 25 DE (dextrose equivalent) corn syrup (CS), 36 DE CS, 63 DE CS, 50% medium invert sucrose, and 65% high-maltose corn syrup (HMCS) were inoculated with Salmonella spp., Listeria monocytogenes, Staphylococcus aureus, Escherichia coli, Pseudomonas aeruginosa, and coliforms at a level of 10(5) cells per g. The inoculated products were stored both at or near their normal holding temperatures (32 to 46 degrees C) and at 26.7 degrees C (the lower limit during transportation). In most of the products the number of microorganisms fell below the detection limit in less than 3 days when the sweeteners were stored at their normal holding temperatures. However, in liquid sucrose S aureus survived up to 2 weeks. When the products were stored at 26.7 degrees C, the reduction in the number of microorganisms occurred at a slower rate. At 26.7 degrees C the fastest rates of reduction were observed in 42 and 55% HFCS and in 50% medium invert sucrose. In these products the number of bacteria fell below the detection limit in 3 to 6 days. The slowest rate of the reduction was observed in the liquid sucrose, in which S. aureus survived up to 1 month. These results indicate that incidental contamination of liquid sweeteners with microbial pathogens will not present a public health or regulatory hazard.

Nishijima S. et al. *The bacteriology of acne vulgaris and antimicrobial susceptibility of Propionibacterium acnes and Staphylococcus epidermidis isolated from acne lesions.* J Dermatol. 2000; 27(5) : 318-23.p Abstract: We examined the species of bacteria aerobically and anaerobically isolated from 30 acne lesions and determined antimicrobial susceptibilities of Propionibacterium acnes (P. acnes) and Staphylococcus epidermidis (S. epidermidis) using nine antimicrobial agents. Among the bacteria isolated, S. epidermidis was most dominant. Both P. acnes and S. epidermidis were isolated from half of the acne lesions. The MIC of seven antimicrobials (ampicillin, erythromycin, roxithromycin, clindamycin, tetracycline, minocycline, nadifloxacin) against P. acnes was under 3.13 micrograms/ml. There were very few resistant strains of P. acnes, but many of S. epidermidis. More than 30% of the S. epidermidis isolates were resistant to erythromycin, roxithromycin, and clindamycin. After long-term systemic antibiotic therapy, the resistant strains of S. epidermidis increased, but P. acnes resistance was still limited. When we use antimicrobial agents for the treatment of acne, it should be noticed that not only P. acnes but also S. epidermidis in the acne lesions may acquire resistance to antimicrobials.

Nishijima S. et al. *Sensitivity of Propionibacterium acnes isolated from acne patients: comparative study of antimicrobial agents.* J Int Med Res. 1996; 24(6) : 473-7.p Abstract: The antimicrobial susceptibility of Propionibacterium acnes isolated before and after treatment of acne patients was measured. The four female and three male acne patients were treated with an oral acne medication, roxithromycin or minocycline, and/or a topical acne medication, nadifloxacin cream or clindamycin hydrochloride lotion for 1-8 weeks. The isolated strains were tested for their susceptibility to the antimicrobial action of: nadifloxacin, ofloxacin, erythromycin, clindamycin hydrochloride, tetracycline hydrochloride, minocycline, doxycycline, ampicillin, cephalexin and gentamycin. No resistant strains of P. acnes were observed.

Nishimura M. et al. *Assessment of the caries activity test (Cariostat) based on the infection levels of mutans streptococci and lactobacilli in 2- to 13-year-old children's dental plaque.* ASDC J Dent Child. 1998; 65(4) : 248-51, 229.p Abstract: It is generally agreed that mutans streptococci and lactobacilli are associated etiologically with dental caries. The caries activity test, Cariostat, was designed to measure the pH decrease caused by microorganisms in the plaque sample obtained from the buccal surfaces. Researchers found the test to be a reliable, diagnostic, and predictive device. Incubation was done on MS and MSB plates in an atmosphere of 95 percent N and 5 percent CO at 37 degrees C and for 48 hours. The relationship of the Cariostat scores and the pH values are shown in a table. The test scores are shown for two age-groups: Ages two-to-six years with primary dentitions, and ages five-to-thirteen years with mixed dentitions. The advantages of the Cariostat test are: the sampling method is simple and the time of analysis is short; the test can be used for the very young and for patients difficult to manage; and it requires no specialized knowledge or equipment.

Nishioka K. et al. *[Recent trends in incidence of respiratory tract pathogens and antimicrobial susceptibilities of Haemophilus influenzae, Streptococcus pneumoniae and Moraxella catarrhalis isolated in 1994 and 1995].* Jpn J Antibiot. 1997; 50(9) : 768-75.p Abstract: The incidence of pathogenic bacteria in respiratory tract infections in 1994 and 1995 was investigated using quantitative cultures of sputa from patients with the infections in our department. Haemophilus influenzae, Streptococcus pneumoniae and Moraxella catarrhalis were isolated at high rates (70.5% in 1994 and 73.8% in 1995) from the specimens of out-patients, and the incident rates were similar to the past data. The antimicrobial susceptibilities of these three pathogens were examined with the agar dilution method. The incidence of penicillin (Pc) resistant S. pneumoniae against which MIC of Pc-G was higher than 0.125 microgram/ml was markedly increased from 24% in 1994 to 34.9% in 1995. Most of the Pc resistant isolates were also resistant to other antibiotics including erythromycin, minocycline and tosufloxacin. Serotype of strains against which MIC of Pc-G was higher than 1.0 microgram/ml was 19. The ratios of beta-lactamase-producing strains among H. influenzae isolated in 1994 and 1995 were 20 and 15.8%, respectively, which were slightly higher than those in the past. One quinolone resistant strain was isolated in this study. Although the ratio of beta-lactamase-producing strains among M. catarrhalis was as high (96.7%) as in the past, no increased resistance against the drugs examined was observed.

Nishioka K. et al. *The incidence of respiratory tract pathogens and antimicrobial susceptibilities of Streptococcus pneumoniae, Haemophilus influenzae and Moraxella (Branhamella) catarrhalis isolated between 1990 and 1993.* Tohoku J Exp Med. 1996; 179(2) : 111-21.p Abstract: Using a quantitative culture of sputum, the incidence of pathogenic bacteria in respiratory infection in our laboratory between 1990 and 1993 were investigated. While Haemophilus influenzae, Streptococcus pneumoniae and Moraxella (Branhamella) catarrhalis were isolated at high rates (67-78%) from the specimens of outpatients throughout the study period, the incidence of S pneumoniae has increased gradually. The antimicrobial susceptibilities of these three pathogens were examined with the agar dilution method. A marked increase of penicillin (PC) resistant S. pneumoniae (MIC > or = 0.1 microgram/ml) was observed with a resistance rate of 2.1% in 1990 and 25% in 1993. Resistance to erythromycin (EM, MIC > or = 1.56 micrograms/ml) was 8.5% in 1990 but then increased to 34% in 1992. Most of the PC resistant isolates were resistant to multidrugs such as EM, minocycline and clindamycin. The MICs of all beta-lactams examined for S. pneumoniae increased along with the MICs of PC, though the level varied between drugs. The rates of beta-lacta-

mase positive H. influenzae gradually decreased, being 14.3% in 1990 and 7.4% in 1993, whereas those of M. (B) catarrhalis were consistently high (> 90%) every year. In addition to beta-lactamase production, the emergence of strains of H. influenzae and M. (B) catarrhalis resistant to new quinolone drugs should be noted.

Nissinen A. et al. *Development of beta-lactamase-mediated resistance to penicillin in middle-ear isolates of Moraxella catarrhalis in Finnish children, 1978-1993.* Clin Infect Dis. 1995; 21(5) : 1193-6.p Abstract: The frequency of beta-lactamase production was analyzed in a study of 1,452 strains of Moraxella catarrhalis and 2,738 strains of Haemophilus influenzae isolated from middle-ear fluid of children < 6 years of age at Tampere University Hospital in Tampere, Finland, between 1978 and 1993. In addition, 401 isolates of M. catarrhalis from similar samples collected in different parts of Finland in 1988-1990 were tested for beta-lactamase production; minimal inhibitory concentrations of ampicillin, cefaclor, cephalothin, erythromycin, tetracycline, and trimethoprim-sulfamethoxazole for these strains were determined. These data were compared with figures for the annual consumption of beta-lactam antimicrobials in the community in 1978-1993. A bimodal increase in the proportion of strains of M. catarrhalis producing beta-lactamase was detected: from 0 to 60% in 1978-1983 and from 60% to 80% in 1988-1990. Concurrently with the second increase, the consumption of cephalosporins increased substantially in the community. The frequency of beta-lactamase-producing strains of H. influenzae did not increase between 1978 and 1993.

Nissinen A. et al. *Antimicrobial resistance in Haemophilus influenzae isolated from blood, cerebrospinal fluid, middle ear fluid and throat samples of children. A nationwide study in Finland in 1988-1990.* Scand J Infect Dis. 1995; 27(1) : 57-61.p Abstract: A nation-wide survey of the prevalence of antimicrobial resistance in Haemophilus influenzae was conducted on isolates collected in 1988-90 from middle ear fluid (MEF), blood, or cerebrospinal fluid (CSF) in infected children or throat samples of healthy children. Altogether 885 strains were examined regarding capsular type b, beta-lactamase production and the minimal inhibitory concentration (MIC) of ampicillin, cefaclor, erythromycin, tetracycline, chloramphenicol, trimethoprim and trimethoprim-sulfamethoxazole for these strains was determined by the agar dilution method. 99% (578/585) of MEF isolates, 93% (112/121) of throat isolates, but only 6% (10/179) of blood/CSF isolates were not of type b (Hib). The rate of beta-lactamase production was 11.4% among Hib strains, 8.0% among non-type b MEF isolates, and 4.5% among non-type b throat isolates. No increase in the prevalence of beta-lactamase production in H. influenzae has taken place in Finland since the early 1980s. Resistance to ampicillin among strains that lacked beta-lactamase activity was rare (0.2%). Of the non-type b MEF and throat isolates, 5.9% and 2.7%, respectively, were resistant to trimethoprim and 3.6% and 2.7%, respectively, to trimethoprim-sulfamethoxazole. Resistance to other drugs was rare (< 2%) in all isolate groups.

Nissinen A. et al. *Antimicrobial resistance in Neisseria gonorrhoeae in Finland, 1976 to 1995. The Finnish Study Group For Antimicrobial Resistance.* Sex Transm Dis. 1997; 24(10) : 576-81.p Abstract: BACKGROUND AND OBJECTIVES: The worldwide increase in antimicrobial resistance in Neisseria gonorrhoeae prompted the authors to evaluate the status and course of resistance in gonococci in Finland. GOALS: The minimal inhibitory concentrations (MIC) of penicillin, tetracycline, spectinomycin, ciprofloxacin, ceftriaxone, and cefixime were tested for 337 consecutive clinical N. gonorrhoeae isolates collected in 19 Finnish microbiology laboratories in 1993. STUDY DESIGN: The results were compared with data obtained in three Finnish laboratories in 1986 and contrasted with the development of the incidence of gonorrhea and the prevalence of penicillinase-producing N. gonorrhoeae (PPNG) in Finland, 1976 to 1995. The number of strains with an elevated MIC to ciprofloxacin was assessed by questionnaire. RESULTS: A decrease, from more than 50% in 1986 to 20% in 1993, of strains susceptible to penicillin and tetracycline was observed. The prevalence of PPNG increased from 0% (1976) to 5.7% (1995). In 1995, two strains with a ciprofloxacin MIC of > or = 32 micrograms/ml were reported. No resistance to ceftriaxone or spectinomycin was detected. CONCLUSIONS: In spite of the rarity of gonorrhea and the availability of efficient antimicrobials in Finland, monitoring of the antimicrobial resistance of N. gonorrhoeae remains important.

Nissinen A. et al. *Antimicrobial resistance of Streptococcus pneumoniae in Finland, 1987-1990.* Clin Infect Dis. 1995; 20(5) : 1275-80.p Abstract: A nationwide survey of the prevalence of antimicrobial resistance among Streptococcus pneumoniae isolates from the middle ear fluid of children with acute otitis media (639 strains) and from throat-swab samples of healthy children (149 strains) was conducted in Finland during 1987-1990. The MICs of penicillin, cephalothin, cefaclor, erythromycin, trimethoprim, and co-trimoxazole were determined by the agar dilution method. Low-level resistance to penicillin (MIC, 0.1-1 microgram/mL) was found in 1.7% of the otitis-related and 1.3% of the healthy-carrier strains. No highly penicillin-resistant strains (MIC, > or = 2 micrograms/mL) were found. Six multiresistant strains were detected, three of them possibly belonging to a previously identified clone present in Finland since 1985. Eighty-five percent of the resistant otitis-related strains, including 9 of the 11 moderately penicillin-resistant strains (4 of which were multiresistant), belonged to the three most common serogroups (6, 19, and 23).

Nitrini, S.M.O.d.O. *Vigilância sentinela em Neisseria gonorrhoeae: características epidemiológicas na cidade de São Paulo e proposta de um modelo a nível nacional*; São Paulo. s.n. 1995; 153.p Abstract: Foram estudadas a suscetibilidade … antimicrobianos (penicilina, tetraciclina, espectinomicina, ceftriaxona, ciprofloxacina e tianfenicol), os sorogrupos e sorovariedades, o auxotipo e a classificação auxotipo/sorotipo de 85 cepas de gonococos isoladas de pacientes do Serviço de Doenças Sexualmente Transmissíveis da Faculdade de Saúde Pública da Universidade de São Paulo, de abril de 1985 a abril de 1990, na cidade de São Paulo. A resistência da Neisseria gonorrhoeae … penicilina foi 3,52 por cento e … tetraciclina 18,7 por cento. As características mais prevalentes encontradas entre as cepas de Neisseria gonorrhoeae foram: sorogrupo IB. (77,64 por cento), as sorovariedades IA4 (11,76 por cento), e IB2 (21,17 porcento),os auxotipos prototófica (54,78 por cento) e prolina (35,47 por cento); e a classificação auxotipo/sorotipo (A/S): PRO IA4 (47 por cento) e PRO IB 1 (8,23 por cento). Os resultados do estudo, … falta de critérios de normatização terapêutica, a inexistência de uma política de Vigilância Epidemiológica para Neisseria gonorrhoeae, a importância e a gravidade que a situação impõe ao nosso país, mostram a necessidade de um programa de Vigilância Sentinela para Neisseria gonorrhoeae … nível nacional, tal como foi proposto (AU).

Niyogi S.K. et al. *Multi-drug resistant non-typhoidal Salmonella spp. associated with acute diarrhoeal disease.* Indian J Med Res. 1999; 110 : 183-5.p Abstract: The prevalence of different serotypes of non-typhoidal Salmonella spp. among patients suffering from acute diarrhoea admitted to the Infectious Diseases Hospital, Calcutta was investigated. The predominant serogroup was C and Salmonella infantis was the major serotype isolated followed by S. worthington, S. enteritidis, S. typhimurium, S. weltevereden and S. newport. All the Salmonella strains were isolated from adults. Multidrug resistance to various antimicrobial agents was observed in 37.5 per cent of the strains. All the strains were sensitive to ciprofloxacin, norfloxacin and gentamycin.

Noah D.L. et al. *Biological warfare training. Infectious disease outbreak differentiation criteria.* Ann N Y Acad Sci. 1999; 894 : 37-43.p Abstract: The threat of biological terrorism and warfare may increase as the availability of weaponizable agents increase, the relative production

costs of these agents decrease, and, most importantly, there exist terrorist groups willing to use them. Therefore, an important consideration during the current emphasis of heightened surveillance for emerging infectious diseases is the capability to differentiate between natural and intentional outbreaks. Certain attributes of a disease outbreak, while perhaps not pathognomic for a biological attack when considered singly, may in combination with other attributes provide convincing evidence for intentional causation. These potentially differentiating criteria include proportion of combatants at risk, temporal patterns of illness onset, number of cases, clinical presentation, strain/variant, economic impact, geographic location, morbidity/mortality, antimicrobial resistance patterns, seasonal distribution, zoonotic potential, residual infectivity/toxicity, prevention/therapeutic potential, route of exposure, weather/climate conditions, incubation period, and concurrence with belligerent activities of potential adversaries.

Noga S.J. *Engineering hematopoietic grafts using elutriation and positive cell selection to reduce GVHD.* Cancer Treat Res. 1999; 101 : 311-30.p Abstract: A systematic approach to hematopoietic graft manipulation has minimized several of the variables inherent to allogeneic BMT. Through this approach, we have been able to significantly impact on morbidity and quality of life following allogeneic transplantation. Acute and chronic GVHD, blood product and antibiotic usage, in patient hospitalization, acuity, costs and survival (especially in patients older than 40) have been improved. The HLA barrier still presents a formidable obstacle to achieving a more widespread use of this therapy. The complications encountered in HLA matched/TCD grafts occur with even greater magnitude in the HLA-mismatched or unrelated donor setting. Several centers are now engaged in studies using TCD grafts that are augmented with high doses of CD34+ cells to ensure engraftment while reducing the incidence of GVHD (50-53). Mobilized allogeneic PBSC appear to be an excellent source of stem cells for BMT (5,6). The earlier reports showed decreased rates of GVHD, despite having T cell burdens 10 times higher than those found in unmanipulated bone marrow. However, several of these centers now report an unacceptably high incidence of chronic GVHD (along with its attendant morbidity) following allogeneic PBSC transplantation (54-55). Initial results of TCD in these PBSC grafts using CD34+ selection are disappointing in that recipients developed unexpectedly high incidences of both acute and chronic GVHD (56). No doubt, significant differences exist between marrow and PBSC ancillary cell populations. For example, two laboratories now report the presence of natural suppressor cells in these allogeneic PBSC products in both mice (57) and humans (58). Thus, the same, step-wise approach would be expected to improve graft performance when using PBSC, cord blood, fetal tissue, xenografts or genetically engineered products as a stem cell source. Indeed, there are new reports of improved clinical outcome (especially in the incidence of GVHD) in the PMRD setting using both CD34+ selected (59) and sequential CD34+/CD2+ selected (60) PBSC grafts. It is hoped that future graft engineering approaches will be as successful as previous studies and will extend this form of therapy to an even larger patient population.

Nogva H.K. et al. *Detection and quantification of Salmonella in pure cultures using 5'-nuclease polymerase chain reaction.* Int J Food Microbiol. 1999; 51(2-3) : 191-6.p Abstract: Advances in detection and quantification assays based on nucleic acids conceivably will revolutionize the ability to quickly and specifically detect and quantify microorganisms in foods. Among these assays, the polymerase chain reaction (PCR) assay and the TaqMan PCR Detection System (Perkin-Elmer) probably are among the most promising. Since a 5'-nuclease PCR renders possible the automated and direct detection and quantification of PCR products (Holland et al., 1991. Proc. Natl. Acad. Sci. USA 88, 7276-7280), microorganisms in foods can be detected and quantified indirectly within a few hours through analysis of the microbial DNA or RNA sequences present. In the present report we have adapted a 5'-nuclease-based kit for the quantification of Salmonella.

Nok A.J. et al. *Triphenyltin salicylate-antimicrobial effect and resistance—the pyrophosphatase connection.* J Enzyme Inhib. 2000; 15(4) : 411-20.p Abstract: The effect of Triphenyltin salicylate (TPS) was tested against six bacteria, Escherichia coli, Staphylococcus aureus, Shigella flexneri, Pseudomonas aeruginosa, Klebsiella pneumoniae and Salmonella typhi and five fungi, Aspergillus flavus, Aspergillus fumigatus, Aspergillus niger, Rhodotorula spp. and Saccharomyces spp. Sensitivity tests were determined with 5-500 microg/ml of TPS. All organisms were sensitive to the compound except Klebsiella pneumoniae, Pseudomonas aeruginosa, Rhodotorula spp. and Saccharomyces spp. The minimum dose of TPS that can kill 50% of the susceptible microorganisms is in the range 5-50 microg/ml. Membrane bound pyrophosphatase(s) from the organisms was non-competitively inhibited by 5 microM TPS with Ki values of 7.6, 18, 8.8 and 6.9 microM for Escherichia coli, Shigella flexneri, Aspergillus niger, and Aspergillus fumigatus, respectively. The physiological index of efficiency of the enzyme (Vmax/KM) for TPS susceptible organisms was reduced by 17-68% in the presence of 5-10 microM of the compound. In contrast the index for the non-susceptible organisms was unaffected. The mode of action of TPS is discussed.

Noppen M. et al. *Bacterial colonization of central airways after stenting.* Am J Respir Crit Care Med. 1999; 160(2) : 672-7.p Abstract: Airway stenting (AS) is increasingly used in the management of obstructive lesions of the central airways. Although retention of secretions and infection have been reported as complications of AS, the microbiological consequences of AS have not yet been evaluated. In this study, we prospectively performed protected specimen brush (PSB) sampling of the airways, before and 3 to 4 wk after AS, in 14 consecutive patients (65 +/- 17 yr), suffering from bronchial (5), extensive esophageal (2), thyroid (1), and adenocystic (1) carcinoma, stenotic tracheal burn lesions (2), postintubation stenosis (2), and Wegener's granulomatosis (1). A cutoff value of >/= 10(2) colony-forming units (cfu). ml(-)(1) was considered diagnostic for airway colonization (AC). PSB results were related to the presence and degree of secretion retention (SR) at the level of the stent. In five of the 14 patients, AC was present prior to AS; in three of these, potentially pathogenic microorganisms (PPM) were identified. After AS, AC was found in 11 (including seven patients without prior AC) of the 14 patients. In six of these patients, one or more PPM were present (Pseudomonas aeruginosa [4], Staphylococcus aureus [3], Streptococcus pneumoniae [1], Klebsiella spp. [1]). Although AC tended to be associated with the presence of SR (PSB >/= 10(2) cfu. ml(-)(1) in 10 of 12 SR-positive and in zero SR-negative cases; PSB < 10(2) cfu. ml(-)(1) in two SR-positive and in two SR-negative cases), statistical significance was not reached (Fisher exact test, p = 0.06). We conclude that AS is frequently followed by AC, the majority of which occurs in patients without AC prior to AS, and is caused by PPM. In no case, however, AC was associated with clinical signs of infection. AC tended to be associated with SR in the stent.

Nord C.E. *In vitro activity of quinolones and other antimicrobial agents against anaerobic bacteria.* Clin Infect Dis. 1996; 23 Suppl 1 : S15-8.p Abstract: The in vitro activities of ciprofloxacin, ofloxacin, sparfloxacin, and DU-6859a against peptostreptococci, Clostridium perfringens, Clostridium difficile, Bacteroides fragilis, Porphyromonas, Prevotella, and Fusobacterium were determined by an agar dilution method. These activities were compared with those of piperacillin/tazobactam, cefoxitin, imipenem, clindamycin, and metronidazole. Imipenem, metronidazole, and DU-6859a were the most active antimicrobial agents that were tested. The in vitro activity of DU-6859a was superior to those of ciprofloxacin, lomefloxacin, ofloxacin, and sparfloxacin.

Norris A.H. et al. *Chloramphenicol for the treatment of vancomycin-resistant enterococcal infections.* Clin Infect Dis. 1995; 20(5) : 1137-44.p Abstract: A retrospective study of patients who received chloram-

phenicol for the treatment of serious vancomycin-resistant enterococcal infections between 1 January 1993 and 31 August 1993 was conducted at the University of Pennsylvania Medical Center (Philadelphia). Antimicrobial susceptibilities as well as the clinical course of infection, adverse events, and response to therapy of 16 patients were reviewed. Forty-seven percent of enterococcal isolates were susceptible only to chloramphenicol, tetracycline, and nitrofurantoin. Types of infection included bacteremias (n = 7), abscesses (n = 7), and others (n = 5). Of 14 patients for whom a clinical response could be ascertained, eight (57%) showed improvement after treatment. Of 11 patients for whom a microbiological response could be ascertained, eight (73%) had sterile cultures after treatment. No lasting adverse effect related to the drug occurred. In-hospital mortality was 56%, but only one death could be directly attributed to vancomycin-resistant enterococcal infection. Chloramphenicol appears to be a useful and well-tolerated agent for the treatment of serious vancomycin-resistant enterococcal infections.

Norwood S. et al. *The safety of prolonging the use of central venous catheters: a prospective analysis of the effects of using antiseptic-bonded catheters with daily site care.* Crit Care Med. 2000; 28(5) : 1376-82.p Abstract: OBJECTIVE: To determine rates of catheter colonization and catheter-related bloodstream infection (CRBSI) when antiseptic-bonded central venous catheters (CVCs) and standardized daily site care are used with no predetermined interval for removal. DESIGN: Prospective observational study. SETTING: Two major trauma centers. PATIENTS: All trauma patients admitted to two major trauma centers that received a CVC from May 1996 through May 1998. INTERVENTIONS: None. MEASUREMENTS AND MAIN RESULTS: Catheters were semiquantitatively cultured to identify bacterial colonization and CRBSI. Monitored variables included total catheter days, anatomical site of catheter insertion, and area in hospital of catheter insertion. CVC tips and intracutaneous segments were semiquantitatively cultured. A total of 460 (92%) of 501 catheters placed in 324 trauma patients were evaluable, representing 95.5% of all catheter days during the study period. Rates of catheter colonization and CRBSI were 5% (5/1000 catheter days) and 1.5% (1.511000 catheter days), respectively. Subclavian catheters were in place longer than femoral or internal jugular catheters (p <.0001), but the colonization rate was significantly lower (p =.03; relative risk, 0.34; 95% confidence interval, 0.15-0.77). No differences in CRBSI rates among anatomical sites or between catheters used < or =14 days and those used >14 days were identified. CONCLUSION: Femoral and internal jugular antiseptic-bonded CVCs develop bacterial colonization earlier than subclavian CVCs. Subclavian antiseptic-bonded CVCs combined with standardized daily site care may be safely used >14 days in trauma patients.

Noskin G.A. *Vancomycin-resistant enterococci: clinical, microbiologic, and epidemiologic features.* J Lab Clin Med. 1997; 130(1) : 14-20.p Abstract: Enterococci have emerged as important nosocomial pathogens with increasing antimicrobial resistance. Within the past 5 years, vancomycin-resistant strains have disseminated throughout the United States and Europe. Many of these organisms are also highly resistant to beta-lactams and aminoglycosides, making them virtually untreatable. Because optimal therapy for these infections is unknown, attributable mortality rates for patients with vancomycin-resistant enterococcal bacteremia are extremely high. Recently identified risk factors for acquisition include prolonged hospitalization, prior antibiotic use, and serious underlying illness. Until effective therapy is available, prevention of infection by proper infection control procedures and judicious antibiotic use is critical.

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O'Brien T.F. et al. *The complex processes of antimicrobial resistance and the information needed to manage them.* Mil Med. 2000; 165(7 Suppl 2) : 12-5.p Abstract: Wide use of a succession of different manufactured antimicrobial agents during the past 60 years has prompted the eventual emergence and progressive spread through the world's interconnecting bacterial populations of a growing variety of genes expressing resistance to those agents. The complex processes that spread and link resistance genes into different distributions at different times and places are driven by antimicrobial selection and by contagion. Management of resistance by reducing selection and contagion in a coordinated way requires better information. Most of the information about the spread of resistance exists in laboratory files of isolates at medical centers, and the information about patient antimicrobial use is found in pharmacy files at the same centers. Putting these in a combined database at each center would give a valuable tool to each center's antimicrobial resistance management team. Merging such databases from multiple centers would provide a public health resource for benchmarking, overview surveillance, and general resistometrics.

O'Connor P.J. et al. *Cardiovascular responses to pulmonary artery catheterization.* Eur J Anaesthesiol. 2000; 17(3) : 168-72.p Abstract: This study compares prospectively the cardiovascular and catecholamine responses to central venous and pulmonary artery catheterization before and after induction of general anaesthesia. Twenty patients for elective coronary artery surgery were randomized into two groups. One group had central venous and pulmonary artery catheterization performed awake using local anaesthesia. The other group had these catheters inserted following induction of general anesthesia. In all patients heart rate, arterial blood pressure, ST segment analysis and epinephrine and norepinephrine levels were measured prior to central venous cannulation and at 2-min intervals until placement of the lines was achieved. There were no statistically significant changes in any cardiovascular or catecholamine variable with time compared with the base-line measurements. There were no statistically significant differences in plasma catecholamine levels between the awake and the anaesthetized groups.

O'Donnell J.A. et al. *Fluoroquinolones.* Infect Dis Clin North Am. 2000; 14(2) : 489-513, xi.p Abstract: The fluoroquinolone class of antimicrobial agents has expanded dramatically in the last 5 years and will continue to grow over the next decade. This article discusses the newer fluoroquinolones in detail, including pharmacokinetics, pharmacodynamics, safety, and drug interactions, and the spectrum of in vitro activity. Newer agents are compared and contrasted with the older ones, particularly ciprofloxacin and ofloxacin, and problems with liver toxicity and trovafloxacin are described. Finally, appropriate use of the fluoroquinolones is discussed, including their role in the treatment of urinary tract infections, sexually transmitted diseases, gastrointestinal infections, osteomyelitis, and respiratory tract infections.

O'Kane G.M. et al. *Staphylococcal bacteraemia: the hospital or the home? A review of Staphylococcus aureus bacteraemia at Concord Hospital in 1993.* Aust N Z J Med. 1998; 28(1) : 23-7.p Abstract: AIMS: To examine the risk factors for, and the complications and mortality of, Staphylococcus aureus bacteraemia. METHODS: A retrospective case review of patients with S. aureus bacteraemia in 1993 diagnosed at the Concord Repatriation General Hospital, Sydney. RESULTS: Of 104 cases reviewed, 32 were due to methicillin resistant S. aureus (MRSA), 73 were due to methicillin sensitive S. aureus (MSSA) and one was a dual infection. Twenty-eight of the bacteraemias were community-acquired, including one case of MRSA, and 76 were hospital-acquired; 38% had an implanted prosthetic device or graft. The average age (68 years), incidence of underlying diseases and hospitalisation in the past month (26%) did not differ between MRSA and MSSA groups. MRSA was more likely in patients with recent

broad-spectrum antibiotic use (53% vs 0, p <.01). Vascular access was the commonest source of sepsis (61%) but in community-acquired cases the source was unknown in 50%. Use of central line access was more predictive of MRSA infection (75% vs 49%, p =.018). In hospital-acquired infection, MRSA sepsis occurred later in the course of the admission (26 days vs eight days, p <.01). Directly attributable mortality was highest in MRSA and community-acquired MSSA infection (9% and 11%) compared with hospital-acquired MSSA infection (1%). CONCLUSIONS: Nosocomial S. aureus bacteraemia, particularly MRSA, is a major source of preventable morbidity, which could be addressed by improved infection control of MRSA, antibiotic use and attention to central line catheter use.

O'Morain C. et al. *Challenges to therapy in the future.* Helicobacter. 2000; 5 Suppl 1 : S23-6; discussion S27-31.p Abstract: Quadruple therapy (with a proton pump inhibitor (PPI), metronidazole, tetracycline and bismuth) is generally reserved for second-line treatment; however, studies using this regimen for 7 days have found it to be effective even in metronidazole-resistant strains. Resistance is an ongoing problem with antimicrobial therapy but considerable progress has now been made into understanding the underlying genetic mechanisms of this process. Metronidazole resistance in Europe is usually in the range of 20-30% of strains but may be as high as 70% in some countries. One genetic mechanism involved is thought to be a mutation of the rdxA gene. Macrolide resistance appears to be on the increase in Europe, varying from 1% in some countries to 13% in others. The genetic mechanism involved has been shown to be a point mutation of a ribosomal RNA. Amoxicillin resistance is an emerging problem that has an adverse effect on eradication rates in clinical practice. Resistance has been shown to be caused by the absence of one of the four binding proteins in the cell wall. Few novel antibiotics have been developed for use in eradication therapy, although rifabutin, secnidazole and furazolidone have shown some success as part of combination therapy. Alternative therapies that have been tested include mucosal protective agents which have been used in place of a PPI in some eradication regimens with some success, and the somatostatin analog, octreotide, that has been used as part of quadruple therapy in place of a PPI and produced eradication rates of approximately 88%. The ultimate challenge is still to develop a safe and effective vaccine against Helicobacter pylori. Current and future research will also focus on identifying genetic targets for therapy, adhesion molecule analogs to prevent binding of the bacterium, and urease inhibitors. The current triple therapy treatment options available for the eradication of Helicobacter pylori infection are over 90% effective in susceptible organisms and there are very few medical conditions to which we can offer such efficacious treatment. Unfortunately, the recommendations made at consensus conferences are not always put into practice and physicians in primary care may be unaware of the true efficacy of eradication therapy. Treatment is very simple: three drugs, twice a day for 1 week. The main focus for both primary care physicians and gastroenterologists should be to reinforce the need for patient compliance, otherwise we will see an increase in antibiotic resistance. Patients should be prewarned that they may experience some mild side effects and should be encouraged to complete the course of treatment. The real challenge for the future will be the management of patients who do not respond to first-line treatment. This paper will focus on potential problems with therapy, such as antibiotic resistance, and possible future solutions, such as novel antibiotics and vaccines.

O'Reilly C.E. et al. *Use of hydrostatic pressure for inactivation of microbial contaminants in cheese.* Appl Environ Microbiol. 2000; 66(11) : 4890-6.p Abstract: The objective of this study was to determine the effect of high pressure (HP) on the inactivation of microbial contaminants in Cheddar cheese (Escherichia coli K-12, Staphylococcus aureus ATCC 6538, and Penicillium roqueforti IMI 297987). Initially, cheese slurries inoculated with E. coli, S. aureus, and P. roqueforti were used as a convenient means to define the effects of a range of pressures and temperatures on the viability of these microorganisms. Cheese slurries were subjected to pressures of 50 to 800 MPa for 20 min at temperatures of 10, 20, and 30 degrees C. At 400 MPa, the viability of P. roqueforti in cheese slurry decreased by >2-log-unit cycles at 10 degrees C and by 6-log-unit cycles at temperatures of 20 and 30 degrees C. S. aureus and E. coli were not detected after HP treatments in cheese slurry of >600 MPa at 20 degrees C and >400 MPa at 30 degrees C, respectively. In addition to cell death, the presence of sublethally injured cells in HP-treated slurries was demonstrated by differential plating using nonselective agar incorporating salt or glucose. Kinetic experiments of HP inactivation demonstrated that increasing the pressure from 300 to 400 MPa resulted in a higher degree of inactivation than increasing the pressurization time from 0 to 60 min, indicating a greater antimicrobial impact of pressure. Selected conditions were subsequently tested on Cheddar cheese by adding the isolates to cheese milk and pressure treating the resultant cheeses at 100 to 500 MPa for 20 min at 20 degrees C. The relative sensitivities of the isolates to HP in Cheddar cheese were similar to those observed in the cheese slurry, i.e., P. roqueforti was more sensitive than E. coli, which was more sensitive than S. aureus. The organisms were more sensitive to pressure in cheese than slurry, especially with E. coli. On comparison of the sensitivities of the microorganisms in a pH 5.3 phosphate buffer, cheese slurry, and Cheddar cheese, greatest sensitivity to HP was shown in the pH 5.3 phosphate buffer by S. aureus and P. roqueforti while greatest sensitivity to HP by E. coli was exhibited in Cheddar cheese. Therefore, the medium in which the microorganisms are treated is an important determinant of the level of inactivation observed.

O'Shaughnessy E.M. et al. *Correlation of in vitro susceptibility results for amoxicillin-clavulanate and ampicillin-sulbactam tested against Escherichia coli.* J Clin Microbiol. 1997; 35(7) : 1902-3.p Abstract: The results of amoxicillin-clavulanate (AUG) and ampicillin-sulbactam (A/S) susceptibility testing by three different susceptibility testing methods, the MicroScan, Etest, and Kirby-Bauer methods, for 61 consecutive isolates of ampicillin-resistant Escherichia coli from different patients were compared. There was poor correlation of results for the two agents, the most and least marked discrepancies being observed by the MicroScan method (86.9% susceptible to AUG and 4.9% susceptible to A/S) and the Kirby-Bauer method (39.4% susceptible to AUG and 32.8% susceptible to A/S), respectively. More organisms were susceptible to AUG than A/S, regardless of the susceptibility testing methodology. The results from a College of American Pathologists survey with one E. coli isolate tested at different institutions also indicated greater susceptibility to AUG than to A/S. These agents are thought to be equally efficacious clinically. The discrepancies observed among methods for each antimicrobial inhibitor combination and the discrepancies observed between the two agents by each testing method suggest that the breakpoints for these agents need to be reevaluated.

Obayashi Y. et al. *Investigation of nosocomial infection caused by arbekacin-resistant, methicillin-resistant Staphylococcus aureus.* Diagn Microbiol Infect Dis. 1997; 28(2) : 53-9.p Abstract: An outbreak of coagulase VII-producing, arbekacin (ABK)-resistant, methicillin-resistant Staphylococcus aureus (MRSA) occurred between September 1994 and December 1995, involving five different wards. Twenty-one patients developed skin, wound, drainage, or respiratory tract colonization with coagulase VII-producing, (ABK)-resistant MRSA. Phenotypic characteristics (production of enterotoxin and TSST-1, antimicrobial susceptibility) and molecular-typing procedure (plasmid DNA profile, pulsed-field gel electrophoresis [PFGE] and arbitrarily primed polymerase chain reaction [AP-PCR] of chromosomal DNA) in isolated strains were compared. Plasmid analysis identified four different profiles and 19 of 22 strains recovered had identical patterns. PFGE of chromosomal DNA identified three different subtypes and 18 (81.8%) isolates shared the same subtype. AP-PCR also demonstrated that most strains had the same phenotypic characteristics. Although traditional epidemiological methods; for exam-

ple, coagulase typing, plays a central role in hospital infection control, combination of plasmid DNA profile, AP-PCR, and PFGE may prove to be a particularly informative means of tracking the nosocomial spread of MRSA.

Oberreuter H. et al. *Quantification of micro-organisms in binary mixed populations by Fourier transform infrared (FT-IR) spectroscopy.* Lett Appl Microbiol. 2000; 30(1) : 85-9.p Abstract: Fourier Transform Infrared (FT-IR) spectroscopy was used for the first time to determine the ratios of different microorganisms in mixtures. Exemplarily, systems composed of two food-associated yeast species (Saccharomyces cerevisiae/Hanseniaspora uvarum) and two yoghurt lactic acid bacteria (Lactobacillus acidophilus/Streptococcus salivarius ssp. thermophilus) were investigated. Determination of the cell number ratio in the lactic acid bacteria system was possible with a minimal prediction accuracy of +/- 16 ratio percentage points while the minimum accuracy of prediction in the yeast two-component system was +/- 4% (both at a 95% confidence level). These results show that FT-IR spectroscopy is potentially a rapid method for the quantification of cell ratios in mixtures of two different microorganisms, provided that the cell ratio does not drop below a certain, system-specific threshold.

Obi C.L. et al. *In-vitro activity of piperacillin and tazobactam combination against clinically significant bacteria.* East Afr Med J. 1998; 75(3) : 162-5.p Abstract: The in-vitro activity of piperacillin/tazobactum which is not among the routinely tested antibiotic at the Public Health Bacteriology Laboratory, Parirenyatwa Hospital, Harare, Zimbabwe was evaluated for its activity against bacterial pathogens using the Kirby-Bauer disk diffusion method. Piperacillin/tazobactum showed superior in-vitro activity against both gram positive and gram negative bacteria when compared with routinely tested antibiotics such as gentamicin, erythromycin, tetracycline, penicillin, chloramphenicol, fusidic acid and clindamycin and the difference was statistically significant ($p < 0.05$). Ciprofloxacin showed in-vitro activity comparable to that of tazobactam/piperacillin. Specifically, 96% of gram positive isolates (comprising Streptococcus pyogenes, Staphylococcus aureus, coagulase negative staphylococci and Streptococcus pneumoniae were sensitive to piperacillin/tazobactam. For gram negative organisms, 98% of Haemophilus influenzae Shigella spp, Klebsiella spp were also sensitive to the combination. The broad spectrum of activity of piperacillin/tazobactam shows that the potential of the drug combination for the treatment of infections caused by diverse microorganisms should not be underestimated. We recommend its inclusion in routine antibiotic sensitivity testing in our hospital.

Odio C.M. *Cefotaxime for treatment of neonatal sepsis and meningitis.* Diagn Microbiol Infect Dis. 1995; 22(1-2) : 111-7.p Abstract: Neonatal sepsis is a clinical syndrome characterized by systemic signs and symptoms, and bacteremia during the first month of life. The incidence is relatively low (one to eight cases/1000 live births), yet the risk of mortality is approximately 25%. Meningitis in the neonate is usually a sequela of bacteremia; however, it is discussed with neonatal sepsis, because they commonly share etiology and pathogenesis. The incidence of meningitis is usually a fraction of the number of infants with sepsis, varying in different settings from one-fourth to one-third. The mortality rate is high, varying in some series from 15%-50%. There are two major forms of presentation of neonatal sepsis. Early-onset disease presents as a fulminant, multisystemic illness during the first 5-7 days of life; late-onset disease is more commonly recognized after the first weeks of life. Because different microorganisms are responsible for the two forms of disease, the choice of antimicrobial agents also differs. Some organisms such as Escherichia coli, group B streptococci, and Listeria monocytogenes may be responsible, whereas other pathogens such as Staphylococcus aureus and S. epidermidis, and Pseudomonas aeruginosa are usually associated with late-onset disease. Classic initial (empiric) treatment of neonatal sepsis and meningitis consists of ampicillin and an aminoglycoside. With the advent of the third-generation cephalosporins, however, the empiric antimicrobial approach for neonatal sepsis and meningitis has changed in most centers. Third-generation cephalosporins cover more of the pathogens implicated in neonatal sepsis and meningitis, except for the enterococci and L. monocytogenes. (ABSTRACT TRUNCATED AT 250 WORDS).

Odore R. et al. *Efficacy of chlorhexidine against some strains of cultured and clinically isolated microorganisms.* Vet Res Commun. 2000; 24(4) : 229-38.p Abstract: The efficacy of chlorhexidine digluconate was determined against some strains of collected and clinically isolated bacteria and fungi. The efficacy was evaluated either by calculating a minimum inhibitory concentration (MIC) or by efficacy trials according to the guidelines of the European Committee for Standardization. The MIC values of chlorhexidine for Staphylococcus aureus, Microsporum gypseum, Microsporum canis and Trichophyton mentagrophytes were 0.625 microg/ml, 12.5 microg/ml, 50 microg/ml and 6.25 microg/ml, respectively. The in vitro efficacy of chlorhexidine was higher against ATCC strains of S. aureus and P. aeruginosa (0.5 mg/ml for 5 min and 0.5 mg/ml for 10 min, respectively) than against clinical isolates (0.5 mg/ml for 15 min and 1 mg/ml for 10 min, respectively). The antiseptic activity of aqueous solutions of chlorhexidine against spores of Bacillus subtilis, Bacillis sfericus and Clostridium perfringens required longer contact times than against the vegetative forms. Nevertheless, 5 mg/ml of chlorhexidine in water-ethanol 20:80 v/v was totally effective against the vegetative forms or spores of these microorganisms.

Offonry S.U. et al. *Microbial populations associated with the retting of melon pods (Colocynthis citrullus L.) during seed recovery.* Plant Foods Hum Nutr. 1998; 52(1) : 37-47.p Abstract: The traditional process for the retting of melon pulp and microbiological characteristics in the recovery of melon seeds (Colocynthis citrullus L.) were investigated. Melon pods were sliced open and exposed for seven days. The pulp underwent a natural fermentation that was characterized by the growth of microorganisms to 10(8)-10(10) cfu/g. The pH fluctuated between 4.8 and 5.1 with a lactic acid content of 0.72%. Bacillus subtilis, B. polymyxa, Lactobacillus fermentum, L. brevis and Streptococcusfaecalis were the predominant microorganisms but, significant contributions were made by Staphylococcus saprophyticus and Enterobacter cloacae. Penicillium, Aspergillus and Rhizopus species including the yeasts, Saccharomyces cerevisiae, Candida krusei and Deboromyces hansenii were isolated from the fermentation. Growth of microorganisms was completely inhibited in antibiotic-treated samples indicating that the melon pods were the main source of microorganisms for the fermentation.

Oguiza J.A. et al. *The galE gene encoding the UDP-galactose 4-epimerase of Brevibacterium lactofermentum is coupled transcriptionally to the dmdR gene.* Gene. 1996; 177(1-2) : 103-7.p Abstract: The galE gene of Brevibacterium lactofermentum, encoding UDP-galactose 4-epimerase (EC 5.1.3.2), has been identified by DNA sequencing downstream from the orf1-sigB-dmdR region. The arrangement of the sigB-dtxR-galE cluster is also conserved in Corynebacterium diphtheriae. The deduced galE product was a protein of 329 aa residues (35.4 kDa) that shared a high degree of identity to known UDP-galactose 4-epimerase proteins from Gram-positive microorganisms (Streptomyces lividans and Streptococcus thermophilus). Transcriptional analysis of the dmdR and galE genes in nutrient-rich medium showed that these genes are part of an operon, that is actively transcribed as a bicistronic mRNA during the exponential growth phase, but transcription of the operon is decreased during the stationary growth phase. In addition, the dmdR gene was also expressed as a monocistronic 0.7-kb transcript during the active growth phase.

Ohara T. et al. *Ultrasound instruments as possible vectors of staphylococcal infection.* J Hosp Infect. 1998; 40(1) : 73-7.p Abstract: In this study, we evaluated whether ultrasound instruments are important in the

spread of nosocomial staphylococcal infections. Following genomic typing by pulsed-field gel electrophoresis, it was apparent that ultrasound procedures transferred colonizing staphylococci from a patient's skin to the ultrasound instruments. Staphylococcus aureus survived in the transmission medium for longer than in water. Furthermore, S. aureus was more resistant to the ultrasonic medium than Pseudomonas aeruginosa, also a significant cause of hospital-acquired infections. To prevent staphylococcal transmission by ultrasound equipment, we recommend disinfection of the probe and removal of the medium after each examination.

Ohene A. *Bacterial pathogens and their antimicrobial susceptibility in Kumasi, Ghana*. East Afr Med J. 1997; 74(7) : 450-5.p Abstract: Between January, 1994 and June, 1996 a survey of bacterial isolates from clinical specimens and their antimicrobial susceptibility was performed at the Komfo Anokye Teaching Hospital, Microbiology Department, Kumasi, Ghana. A total of 11,380 bacterial isolates were cultured from eight different specimens. The sites of origin were wounds 32.2%, urine 28.1%, ear, nose and throat 3.6%, sputum 2.5% and aspirates 2.5%. Gram-negative bacteria accounted for 7955 (69.9%) isolates, the main species were Escherichia coli 47.1%, Pseudomonas spp. 16.8%, Proteus spp 14.6%, Klebsiella spp 10.2%, Neisseria gonorrhoeae 4.2%, Gram-positive bacteria contributed 3425 ((30.1%) of isolates, with Staphylococcus aureus 54.6% being the most predominant followed by Coagulase negative Staphylococcus 18.1%, Streptococcus pneumoniae 13.7% and Beta-haemolytic streptococci 4.1%. Escherichia coli showed 88% and 82% resistance to ampicillin and cotrimoxazole respectively with 78% being susceptible to gentamicin. Cefuroxime resistance in Gram-negative bacilli was 5%. As much as 30.6% and 21.7% of Streptococcus pneumoniae isolates were resistant to Penicillin and chloramphenicol respectively. Ten per cent of Staphylococcus aureus strains were susceptible to penicillin and 18% were resistant to flucloxacillin.

Ohman S.C. et al. *The prevalence of Staphylococcus aureus, Enterobacteriaceae species, and Candida species and their relation to oral mucosal lesions in a group of 79-year-olds in Goteborg.* Acta Odontol Scand. 1995; 53(1) : 49-54.p Abstract: A subject sample comprising 100 persons (47 men and 53 women) 79 years of age and selected on a statistical basis (representing all persons of that age living in Goteborg) was the object of a general medical, clinical, and microbiologic study of the prevalence of microorganisms in the oral cavity known to cause opportunistic infections. A high prevalence of diseases and frequent medications were recorded among the participants. Staphylococcus aureus was present in five patients and Enterobacteriaceae species in only one individual. Candida albicans was not found in any samples from the palatal mucosa of the 25 individuals without dentures. Of 36 healthy denture wearers C. albicans was found in 9 (25%). In 39 persons with denture stomatitis C. albicans was obtained in 11 (28%) of the samples from the mucosa, 29 (74%) from the dentures, and 10 (26%) from the angulus oris. The prevalence of S. aureus, enteric rods, and C. albicans was low in the elderly population and, when present, correlated with the presence of dentures. No association with the patients' general health or drug use was obtained.

Ohnishi Y. et al. *Ceramidase activity in bacterial skin flora as a possible cause of ceramide deficiency in atopic dermatitis.* Clin Diagn Lab Immunol. 1999; 6(1) : 101-4.p Abstract: A marked decrease in the content of ceramide has been reported in the horny layer of the epidermis in atopic dermatitis (AD). This decrease impairs the permeability barrier of the epidermis, resulting in the characteristic dry and easily antigen-permeable skin of AD, since ceramide serves as the major water-holding molecule in the extracellular space of the horny layer. On the other hand, the skin of such patients is frequently colonized by bacteria, most typically by Staphylococcus aureus, possessing genes such as those for sphingomyelinase, which are related to sphingolipid metabolism. We therefore tried to identify a possible correlation between the ceramide content and the bacterial flora obtained from the skin of 25 patients with AD versus that of 24 healthy subjects, using a thin-layer chromatographic assay of the sphingomyelin-associated enzyme activities secreted from the bacteria. The findings of the assay demonstrated that ceramidase, which breaks ceramide down into sphingosine and fatty acid, was secreted significantly more from the bacterial flora obtained from both the lesional and the non-lesional skin of patients with AD than from the skin of healthy subjects; sphingomyelinase, which breaks sphingomyelin down into ceramide and phosphorylcholine, was secreted from the bacterial flora obtained from all types of skin at similar levels for the patients with AD and the healthy controls. The finding that the skin of patients with AD is colonized by ceramidase-secreting bacteria thus suggests that microorganisms are related to the deficiency of ceramide in the horny layer of the epidermis, which increases the hypersensitivity of skin in AD patients by impairing the permeability barrier.

Okamoto A.C. et al. *Influence of antimicrobial subinhibitory concentrations on hemolytic activity and bacteriocin-like substances in oral Fusobacterium nucleatum*. New Microbiol. 2000; 23(2) : 137-42.p Abstract: Fusobacterium nucleatum is considered for its role in colonization of initial and late microorganisms in dental plaque and for its coaggregation with other bacterial species. It is known that action of different antimicrobial substances may interfere with either virulence factors or with host-bacteria interaction. The goal of this study was to examine the influence of subinhibitory concentrations of chlorhexidine, triclosan, penicillin G and metronidazole on hemolytic activity and bacteriocin-like substance production of oral F. nucleatum. A high resistance to penicillin G was observed and 63% of the isolates were beta-lactamase positive. All the tested isolates were susceptible to metronidazole. F. nucleatum isolates grown with or without antimicrobials were alpha-hemolytics. Bacteriocin-like substance production was increased in isolates grown with penicillin G. Impaired production of hemolytic or antagonic substances can suggest a role in the regulation of oral microbiota.

Okeke I.N. et al. *Antibiotic resistance in Escherichia coli from Nigerian students, 1986 1998*. Emerg Infect Dis. 2000; 6(4) : 393-6.p Abstract: We tested 758 fecal Escherichia coli isolates, recovered from Nigerian students in 1986, 1988, 1990, 1994, and 1998, for susceptibility to seven antimicrobial drugs. The prevalences of strains resistant to tetracycline, ampicillin, chloramphenicol, and streptomycin were 9% to 35% in 1986 and 56% to 100% in 1998. These findings demonstrate that resistance gene reservoirs are increasing in healthy persons.

Okeke I.N. et al. *Heterogeneous virulence of enteroaggregative Escherichia coli strains isolated from children in Southwest Nigeria*. J Infect Dis. 2000; 181(1) : 252-60.p Abstract: Enteroaggregative Escherichia coli (EAEC) has been implicated in acute and persistent diarrhea, and most strains harbor a member of a partially-conserved plasmid family (called pAA). We studied EAEC isolated from Nigerian children aged <5 years to elucidate the roles of plasmid and chromosomal EAEC loci. We tested a total of 131 EAEC strains isolated from acute diarrhea case patients and control subjects for hybridization with 8 pAA plasmid-derived and 2 chromosomal gene probes, for several in vitro phenotypes and for resistance to antimicrobial agents. Using by multiple logistic regression, we found genes encoding the AAF/II fimbriae to be strongly associated with diarrhea in this population. EAEC strains appear to be of heterogeneous virulence, and data suggest that AAF/II may be a marker for pathogenic strains.

Okeke I.N. et al. *Socioeconomic and behavioral factors leading to acquired bacterial resistance to antibiotics in developing countries.* Emerg Infect Dis. 1999; 5(1) : 18-27.p Abstract: In developing countries, acquired bacterial resistance to antimicrobial agents is common in isolates from healthy persons and from persons with community-acquired infections. Complex socioeconomic and behavioral factors associated with antibiotic resistance, particularly regarding diarrheal and respiratory pathogens, in developing tropical countries, include misuse

of antibiotics by health professionals, unskilled practitioners, and laypersons; poor drug quality; unhygienic conditions accounting for spread of resistant bacteria; and inadequate surveillance.

Okide G.B. et al. *Antimicrobial activities of some amino derivatives of 5,7-dibromo-2-methyl-8-hydroxyquinoline.* Biol Pharm Bull. 2000; 23(2) : 257-8.p Abstract: The bromine atoms of the title compound, 5,7-dibromo-2-methyl-8-hydroxyquinoline were replaced by the requisite amino compound to afford 6 amino derivatives viz: bis(diethylamino)-, bis(dibutylamino)-, bis(dicyclohexylamino)-, dipyrolidino-, dipiperidino- and dipiperazino derivatives. The antimicrobial activity of these compounds were investigated against selected gram positive (Staphylococcus aureus and Bacillus subtilis), gram negative bacteria (Escherichia coli and Pseudomonas aeruginosa) and yeast (Candida albicans). All the compounds showed significant activity against the test microorganisms, from 5-30 times compared to the title compound. It was observed that all derivatives were more effective against gram positive bacteria. No correlation has been established between the minimum inhibitory (MIC) concentrations of the derivatives and the structural modifications.

Okonofua F.E. et al. *Lower genital tract infections in infertile Nigerian women compared with controls.* Genitourin Med. 1995; 71(3) : 163-8.p Abstract: OBJECTIVE—To investigate the possibility that infertile Nigerian women have a higher rate of cervical colonisation with pathogenic and facultative organisms than fertile controls. DESIGN—The prevalence of common microorganisms in the vagina and endocervical canals of infertile women was compared with that of pregnant controls. SETTING—The Obafemi Awolowo University Hospital Maternity Centre. SUBJECTS—92 infertile women were compared with 86 pregnant controls. MAIN OUTCOME MEASURES—rates of isolation of Neisseria gonorrhoeae, Candida albicans, Trichomonas vaginalis and other facultative organisms in cases and controls. RESULTS—The rate of isolation of Neisseria gonorrheae was 17.4% among infertile women compared with 10.5% in the group of pregnant women ($p > 0.05$). There was no significant difference between the groups in the rate of isolation of Candida albicans, Trichomonas vaginalis and other facultative organisms. High rates of isolation of microorganisms were observed in both groups. However, women with secondary infertility had higher rate of carriage of Neisseria gonorrheae, Candida albicans and Staphylococcus aureus as compared with women with primary infertility. Nearly 15% of infertile women had previous episodes of pelvic inflammatory disease and 26% had had induced abortions. A positive history of vaginal discharge was a poor predictor of vagina and endocervical carriage of microorganisms. CONCLUSIONS—High rates of pathogenic organisms exist in the lower genital tract of infertile women and controls. Women with secondary infertility are more likely to have pathogenic organisms than women with primary infertility. A policy of routinely screening women for lower genital tract infections should be pursued in this population because of the high rate of infection.

Okuda K. et al. *The efficacy of antimicrobial mouth rinses in oral health care.* Bull Tokyo Dent Coll. 1998; 39(1) : 7-14.p Abstract: There is growing public recognition of the importance of oral health, as symbolized by the theme. "Oral Health for a Healthy Life" proposed for the 1994 World Health Day. In this report, the efficacy of antimicrobial mouth rinses, mainly Listerine, was reviewed by three investigators who are working as a microbiologist, a microbiologist, a dentist, and a dental hygienist participating in oral health care. Listerine, an antimicrobial mouth rinse, completely killed microorganisms in 10 to 30 seconds; the microbes includes methicillin-resistant Staphylococcus aureus, Streptococcus pyogenes, Helicobacter pylori, Candida albicans, Streptococcus mutans, Actinomyces viscosus, Porphyromonas gingivalis, Prevotella intermedia, and Actinobacillus actinomycetemcomitans. Listerine was also weakly effective in inactivating human immunodeficiency viruses. Bacteria in samples collected from human dental plaque and saliva were completely killed within 30 seconds when exposed to Listerine. When saliva samples were collected from subjects who had rinsed their mouths with 20 ml of Listerine or 1:50 diluted povidone-iodine, levels of viable anaerobic bacteria in the samples were reduced to 1%. When Listerine was used for oral surgery such as tooth extraction and periodontal surgery, the agent was effective in relieving toothache. This was probably due to a decrease in oral bacteria by the antimicrobial action of Listerine, leading to lowering the inflammatory response of the host. The use of antimicrobial mouth rinse during dental treatments such as endodontic treatment proved effective for more reliable infection control. In Japan, there are an increasing number of elderly and medically compromised hosts who are potentially at risk for developing pneumonia due to silent aspiration of microbes in the oral cavity and throat. For the aged with such potential risk, using of antimicrobial mouth rinse may be effective in preventing dental plaque accumulation when used in addition to the mechanical control of plaque, since they tend to have difficulty in brushing teeth by themselves. Indeed, the use of antimicrobial mouth rinse in these elderly people proved useful not only in preventing bacterial pneumonia, but also in improving their quality of life by preserving their oral health.

Olafsson M. et al. *Urinary tract infections, antibiotic resistance and sales of antimicrobial drugs—an observational study of uncomplicated urinary tract infections in Icelandic women.* Scand J Prim Health Care. 2000; 18(1) : 35-8.p Abstract: OBJECTIVES: To analyse the antimicrobial susceptibility pattern of bacteria causing symptomatic but otherwise uncomplicated lower urinary tract infections (UTI) in primary health care and the sales of antimicrobial drugs. SETTING: Primary health care in Akureyri District, Northern Iceland, with about 17400 inhabitants. PATIENTS: A total of 516 episodes of symptomatic but otherwise uncomplicated lower UTI in women 10 to 69 years of age. MAIN OUTCOME MEASURES: Number of verified UTI, bacterial species, antimicrobial susceptibility pattern, and total sales of antimicrobial drugs. RESULTS: Escherichia coli was by far the most common cause of UTI (83%), followed by Staphylococcus saprophyticus (7%). Infections caused by E. coli resistant to ampicillin accounted for 36% of cases, with the corresponding figures for sulfafurazol being 37%, cephalothin 45%, trimethoprim 13% and mecillinam 14%. Only 1% of the strains were resistant to nitrofurantoin. The total use of antimicrobial drugs was 17.4 DDD/1000 inhabitants/day. CONCLUSIONS: The resistance of bacteria causing uncomplicated UTI to common antimicrobials is high and must be taken into account when selecting treatment strategies. High consumption of antibiotics in the community indicates possible association.

Olesen B. et al. *A comparative study of nosocomial and community-acquired strains of Escherichia coli causing bacteraemia in a Danish University Hospital.* J Hosp Infect. 1995; 31(4) : 295-304.p Abstract: In a previous study we found a considerably higher mortality rate in patients with nosocomial (NO) compared with community-acquired (CA) Escherichia coli bacteraemia. To establish whether this was due to host differences or to differences in the infecting bacteria, we compared 205 NO with 172 CA bacteraemic isolates of E. coli with respect to serotype, virulence factors and antimicrobial susceptibility. Overall the six most frequent O antigens were O18ac, O6, O1, O2, O15 and O75, respectively. The six most frequent capsular antigens were K1, K5, K52, K2, K7 and K34, respectively. No major differences were found regarding O-antigens, capsular antigens, production of haemolysin, P-fimbriation, serum sensitivity or antimicrobial susceptibility. Surprisingly we found 17 strains of serotype O15:K52:[H1] of both NO (eight) and CA (nine) origin with similar phenotypic characteristics to a strain causing a CA outbreak in London 1986-1987. Possibly the Danish and the English strains belong to the same clone. Our findings argue against the existence of a distinct NO flora. NO E. coli bacteraemia strains seem to originate primarily from the patients' own flora.

Oliviera M.H. et al. *Microbiological quality of reconstituted enteral formulations used in hospitals.* Nutrition. 2000; 16(9) : 729-33.p Abstract: Contamination of enteral feeds may occur during preparation, storage, decanting, and administration to patients. The aim of this study was to investigate the microbiological quality of reconstituted enteral feeds, residual feeds from feed delivery systems, and the water used to reconstitute powdered feeds in hospital. Hazard Analysis Critical Control Points (HACCP) system was implemented to control microbiological contamination of the enteral feeding formulations. Before the implementation of the HACCP system microbiological analyses of feeds showed the presence of indicator organisms such as coliforms and Enterococcus spp. and unacceptably high levels of mesophilic aerobic microorganisms (>10(4) cfu/mL). After the implementation of the HACCP, the microbial quality of the feeds improved significantly, with counts of <10(1) cfu/mL. Blenders used in reconstituting feeds were found to be the main source of bacterial contamination.

Olson E.S. et al. *Do antimicrobials have a role in preventing septicaemia following instrumentation of the urinary tract?* J Hosp Infect. 2000; 45(2) : 85-97.p Abstract: Urinary tract instrumentation is a significant cause of septicaemia. Review of the literature suggests that selective use of antimicrobials would reduce the risk of septicaemia as this varies between patients and with procedures. Antimicrobial prophylaxis is indicated for patients at high risk of endocarditis, or who are neutropenic. For patients without these risk factors, it is indicated for open, transurethral, or certain forms of laser prostatectomy or transrectal prostate biopsy. For cystoscopy, antimicrobials are indicated for patients with preoperative bacteriuria or a preoperative indwelling catheter. Single dose aminoglycosides or oral fluoroquinolones are the agents of choice with the exception of the prevention of endocarditis, where combinations active against streptococci are recommended. For other instrumentations, the risk of antimicrobial toxicity probably outweighs the benefits and a risk-reduction strategy is recommended. Further studies are required to provide definitive answers in many of these areas. Copyright 2000 The Hospital Infection Society.

Olukoya D.K. et al. *Plasmid profiles and antibiotic susceptibility patterns of Staphylococcus aureus isolates from Nigeria.* Afr J Med Med Sci. 1995; 24(2) : 135-8.p Abstract: In an investigation into the problems of infections due to Staphylococcus aureus in Nigeria, 100 strains were isolated from various hospitals in Lagos. The strains were screened for the presence of plasmids and for susceptibility to antimicrobial agents. Plasmids were extracted by modification of the method of Takahashi and Nagono[1]. The plasmids were diverse in nature. The strains were found to be highly resistant to commonly prescribed antibiotics.

Olukoya D.K. et al. *Plasmid profiles and antimicrobial susceptibility patterns of Vibrio cholerae O1 strain isolated during a recent outbreak in Nigeria.* J Diarrhoeal Dis Res. 1995; 13(2) : 118-21.p Abstract: In a study on the outbreak of cholera in Nigeria in 1992, 86 strains of Vibrio cholerae O1 (79 Ogawa serotype and 7 Inaba serotype) were isolated. Antimicrobial susceptibility testing and plasmid profile analysis of the strains were done. Most isolates were highly sensitive to ciprofloxacin, cefotaxime, chloramphenicol, gentamicin, erythromycin, nalidixic acid, and nitrofurantoin, and less sensitive to ampicillin, penicillin, cloxacillin, cotrimoxazole, streptomycin, and tetracycline. The strains showed 13 resistant patterns; the commonest resistant patterns were Apr, Smr, and ApTcr. A total of 41 (47.6%) strains contained one or more plasmid(s) with sizes ranging from 4.5 kilobase to 150 kilobase. Ten isolates were able to transfer resistant plasmids to Escherichia coli K-12 by conjugation. Antibiogram patterns distinguished more isolates than in plasmid profile analysis. Plasmids specifying resistance to ampicillin, tetracycline, and trimethoprim were found. The differing patterns of antibiogram and plasmid profiles indicated that many circulating strains were responsible for the last outbreak in the country.

Omari M.A. et al. *Pattern of bacterial infections and antimicrobial susceptibility at the Kenyatta National Hospital, Nairobi, Kenya.* East Afr Med J. 1997; 74(3) : 134-7.p Abstract: To monitor clinically significant isolates and their antimicrobial susceptibilities, all specimens sent to microbiology laboratory of the Kenyatta National Hospital were cultured on appropriate media. The susceptibility of the isolates was performed on Muller Hinton or diagnostic sensitivity test (DST) agar using comparative discs diffusion technique. The results were then entered into Microbe Base 2 computer programme. A total of 7416 clinically significant isolates were collected from 1991 to 1995. The most commonly isolated organisms were E.coli, Klebsiella and Staphylococcus aureus. Most of these hospital acquired infections had multiple resistance to conventional antimicrobials, namely, penicillin, tetracyclines, gentamicin, trimethoprim/sulphamethoxazole and ampicillin. The resistance pattern was high among both gram negative and positive bacteria isolates. Beta-lactamase production amongst them were 51%, 69.3%, 79.6% respectively. Prevalence of methicillin resistant Staphylococcus aureus was 39.8%. Addition of clavulanic acid to amoxycillin increased Staphylococcus aureus susceptibility three fold. The emergence of multiple drug resistance calls for a continuous monitoring and reviewing of antibiotic policy in the hospital and the country at large.

Onyeji C.O. et al. *Interferon-gamma effects on activities of gentamicin and vancomycin against Enterococcus faecalis resistant to the drugs: an in vitro study with human neutrophils.* Int J Antimicrob Agents. 1999; 11(1) : 31-7.p Abstract: The emergence of multidrug-resistant enterococci presents a major therapeutic challenge since there is currently no clearly effective antimicrobial therapy for these infections. The combinatorial effects of interferon-gamma (IFN-gamma) with gentamicin and/or vancomycin against a clinical isolate of drug-resistant Enterococcus faecalis, were evaluated in an in vitro system with human neutrophils. Following inoculation of cultures of human neutrophils with the organism, treatments were initiated immediately after the infection and the number of viable bacteria was determined at 12, 18 and 24 h. Antibiotics were applied at concentrations close to their clinically achievable serum trough and peak levels. Treatment with IFN-gamma alone induced a maximal growth inhibition of up to 40% at a concentration of 100 U/ml. Addition of the cytokine to either therapeutic trough or peak concentrations of gentamicin and vancomycin, or a combination of both antimicrobials, was associated with a significant ($P < 0.01$) enhancement of anti-enterococcal activity compared with the effects of the agents alone. Investigation of a potential underlying mechanism of anti-enterococcal action of IFN-gamma reveals that it is, most probably, largely due to an activated secretion of the microbicidal reactive oxygen intermediates by neutrophils. The results of this study show that there is a possibility that IFN-gamma could be a useful adjunct in the treatment of multidrug-resistant E. faecalis.

Onyshchenko A.M. et al. *[The role of the carbohydrate composition of the glycocalyx in some species of lactobacilli in the manifestation of their adhesive properties].* Mikrobiol Z. 1999; 61(6) : 22-8.p Abstract: Availability of certain monosaccharides in the composition of glycocalyx of lactic acid bacteria (Lactobacillus plantarum—strains 337D and 11/16; Streptococcus thermophilus—strains S1 (nonmucous race) and S5 (mucous race), Enterococcus faecium (K-50) has been investigated with the help of plant lectins with certain carbohydrate specificity labelled by colloid gold. All the microorganisms under investigation were characterized by the presence of N-acetyl-D-galactosamine and N-acetyl-D-glucosamine in rather insignificant amounts. Glycocalyx of lactic acid bacteria was also characterized by availability of essential amount of L-fructose and low amount of sialic acid (except for S. thermophilus S5 (mucous race). Presence of alpha-N-acetyl-D-galactosamine, alpha-D, beta-D-galactose, alpha-D-glucose, alpha-D-mannose in the composition of the lactic acid bacteria glycocalyx composition evidences for the additional role of these monosaccharides in the process of the microorganism adhesion on the human and animal intestine mucosa. It has been confirmed that

availability of certain monosaccharides in the composition of surface glycopolymers of lactic acid bacteria was connected with adhesive properties of cells and their existence conditions.

Orden B. et al. *Erythromycin resistance of Streptococcus pyogenes in Madrid.* Pediatr Infect Dis J. 1998; 17(6) : 470-3.p Abstract: BACKGROUND: Erythromycin is considered to be an adequate alternative to penicillin for patients who are allergic to penicillin. Erythromycin-resistant Streptococcus pyogenes strains have been reported in some parts of the world. METHOD: The in vitro activity of erythromycin and other antimicrobial agents was determined in a total of 1310 clinical Streptococcus pyogenes isolates collected in the city of Madrid from January, 1993, through December, 1996. RESULTS: All strains showed susceptibility to penicillin, rifampin, vancomycin and chloramphenicol. Tetracycline resistance was 8.5%. In 36 of the strains (2.7%) MIC was 4 microg/ml for ofloxacin. Clindamycin resistance was observed in only 18 strains (1.4%); this resistance was constitutive in 15 and inducible in 3 strains. Resistance to erythromycin was observed in 14.3% of the strains, showing an increase during the study period (2.0% in 1993 vs. 22.4% in 1996; chi square for linear trend 68.8, P < 0,0001); >90% of them showed the novel resistance phenotype described by Seppala et al. and 32 of 32 of these strains showed by PCR the 1.4-kb fragment of the mefA gene recently described as the novel macrolide efflux resistance determinant. The erythromycin-resistant strains were isolated more often in pediatric patients (144 of 872) than in adults (44 of 438) (chi square 9.9, P = 0.0016). CONCLUSION: The study emphasizes the need to screen for resistance to macrolides in S. pyogenes and indicates that resistance to erythromycin in S. pyogenes has increased significantly in Madrid.

Ordorica R.C. et al. *Evaluation and management of mechanical dysfunction in continent colonic urinary reservoirs.* J Urol. 2000; 163(6) : 1679-84.p Abstract: PURPOSE: We analyze a group of patients who presented with mechanical dysfunction of the reservoir and/or efferent limb of a continent colonic urinary diversion, and establish an evaluation and management algorithm. MATERIALS AND METHODS: A total of 16 patients with a mean age of 58 years and 1 or more symptoms related to continent colonic urinary diversion were evaluated. Presenting symptomatology included difficult catheterization in 8 cases (50%), disabling incontinence in 8 (50%) and recurrent urinary tract infections in 6 (37.5%). All patients had normal, nonobstructed, nonrefluxing upper tracts and none presented with stone disease. Urological evaluation consisted of catheterization, fluoroscopy and urography of the pouch, retrograde urography of the external limb and urodynamics (enterocystometrogram and outlet pressure profilometry). RESULTS: Of the 8 patients with difficulty with catheterization 4 had stomal stenosis, 2 had an elongated and redundant external limb, and 2 had a false passage. Diagnosis was established by the inability to catheterize, fluoroscopy of the pouch and retrograde urography. Disabling incontinence occurred in 8 patients, including 7 who presented with an incompetent outlet and 2 with high pressure intestinal contractions of the reservoir. The aforementioned abnormalities were diagnosed by a combination of retrograde urography, urography of the pouch and urodynamics. Recurrent symptomatic urinary infections were observed in 5 patients of the previous groups and in another with an hourglass reservoir, which was primarily diagnosed by urography of the pouch. Surgical correction in 15 patients included outlet reinforcement, reservoir revision, stomal or external limb revision and conversion to a urinary conduit. Surgical treatment was successful in 14 of 15 patients (93%). CONCLUSIONS: Catheterization difficulty requires retrograde urography to define possible anatomical abnormalities (false passage, conduit elongation) if catheterization and fluoroscopy of the pouch do not demonstrate stomal stenosis. Urinary incontinence benefits from enterocystometry and outlet pressure measurement to determine reservoir and external limb function. Recurrent urinary tract infections not related to ureteral obstruction or reflux requires fluoroscopy of the pouch and external limb to determine abnormalities in patients with detubularization and localization of areas of urine pooling.

Orloff S.L. et al. *Vancomycin-resistant Enterococcus in liver transplant patients.* Am J Surg. 1999; 177(5) : 418-22.p Abstract: BACKGROUND: Vancomycin-resistant Enterococcus (VRE) infection is emerging in the transplant population, and there is no effective antibiotic therapy available. The aims of this retrospective review were to (1) investigate the outcome of and (2) identify common characteristics associated with VRE infection and colonization in orthotopic liver transplant (OLTx) candidates. METHODS: From October 1994 through September 1998, 126 isolates of VRE were identified in 42 of 234 OLTx recipients and 5 OLTx candidates who did not proceed to transplantation. Data were collected by patient chart review or from a computerized hospital database. RESULTS: The 1-year mortality rate with VRE infection was 82%, and with VRE colonization, 7%. This mortality rate contrasts with a 14% 1-year mortality for non-VRE transplant patients (P <0.01, infected patients and colonized patients). Characteristics of VRE colonized and infected patients included recent prior vancomycin (87%), coinfection by other microbial pathogens (74%), recent prior susceptible enterococcal infection (72%), concurrent fungal infection (62%), additional post-OLTx laparotomies (47%), and renal failure (Cr >2.5 mg/dL or need for dialysis; 43%). Biliary complications were seen in 52% of post-OLTx VRE-infected or VRE-colonized patients (versus 22% in non-VRE transplant patients, P <0.05). CONCLUSION: VRE infection is associated with a very high mortality rate after liver transplantation. The incidence of biliary complications prior to VRE isolation is very high in VRE-infected and VRE-colonized patients. The most common characteristics of VRE patients were recent prior vancomycin use, recent prior susceptible enterococcal infection, coinfection with other microbial pathogens, and concurrent fungal infection. With no proven effective antimicrobial therapy for VRE, stringent infection control measures, including strict and limited use of vancomycin, must be practiced.

Orrett F.A. *Methicillin resistance among Trinidadian isolates of community and hospital strains of Staphylococcus aureus and their patterns of resistance to non-beta-lactam antibiotics.* Jpn J Infect Dis. 1999; 52(6) : 238-41.p Abstract: The prevalence of methicillin-resistant Staphylococcus aureus (MRSA) strains in Trinidad and the extent of their resistance to other antimicrobial agents in hospital-acquired and community-acquired infections were evaluated over a 2-year period. A total of 450 S. aureus strains were isolated from different patients. The prevalence of methicillin resistance among S. aureus strains was 9.8% (44/450). The proportion of MRSA isolated from hospital sources and community sources was 12.5% (38/305) and 4.1% (6/145), respectively (P < 0.05). The resistant rates of MRSA to the non-beta-lactam antibiotics were as follows: 93.2% resistance to tetracycline, 68.2% to erythromycin, 61.4% to gentamicin, 45.5% to co-trimoxazole, and 20.5% to ciprofloxacin. No MRSA resistant to vancomycin was observed in this study. Study results showed significant increases in MRSA in hospital, 2% in 1995 to 12.5% in 1998 (P < 0.05), and community, 0% in 1995 to 4.1% in 1998 (P < 0.05). It has become apparent that infection control and surveillance initiatives must be focused now on the community in order to monitor and limit the spread of this new and expanding reservoir of MRSA.

Orrett F.A. *Prevalence of Proteus species in urinary tract infections in a regional hospital in Trinidad.* Chung Hua I Hsueh Tsa Chih (Taipei). 1999; 62(7) : 438-42.p Abstract: BACKGROUND: Proteus bacteria are a well-known cause of urinary tract infections (UTIs). The prevalence of UTIs is high among catheterized patients and those undergoing manipulation of the urinary tract. This study assessed the prevalence of UTIs due to Proteus species, the predisposing factors, complications and extent of antimicrobial resistance at a regional teaching hospital. METHODS: Urine samples in sterile containers from inpatients and outpatients were inoculated onto cysteine lactose electrolyte deficient agar and sheep blood agar plates with cali-

brated (0.001 ml) platinum loops and incubated aerobically at 35 degrees C to 37 degrees C for 18 to 24 hours. A colony count of 10(5) bacteria/ml or more was the criterion for significant bacteriuria. Proteus spp were identified and classified into four groups. Susceptibility testing was performed via the Kirby-Bauer disc diffusion technique on Mueller-Hinton agar using ampicillin (10 micrograms), tetracycline (30 micrograms), nalidixic acid (30 micrograms), gentamicin (10 micrograms), nitrofurantoin (30 micrograms), co-trimoxazole (30 micrograms) and cefuroxime (30 micrograms). RESULTS: Of 1,397 urine specimens from hospital and community patients, 414 had one or more species of bacteria isolated, of which 74 (17.9%) were Proteus spp. Hospital-acquired UTIs accounted for more than two-thirds (51/74, 68.9%) of Proteus spp isolates, while community-acquired UTIs accounted for approximately one-third (23/74, 31.1%) of all Proteus isolates. The prevalence of Proteus UTIs in males was 34 of 184 (18.5%) and was slightly higher than in females (40/230, 17.4%). P mirabilis was the most frequently isolated Proteus sp (55/74, 74.3%), followed by P vulgaris (9/74. 12.2%), Morganella morganii, (7/74, 9.5%) and Providencia rettgeri (3/74, 4.0%). Forty-nine of 55 (89%) P mirabilis isolates were biotype 2. Catheterization was the most common predisposing factor in 32.4% of hospital-acquired Proteus UTIs. More than 92% of Proteus isolates were sensitive to gentamicin and nalidixic acid, whereas, ampicillin (35%) and tetracycline (18%) were the least effective drugs. CONCLUSIONS: Proteus was isolated from about 18% of patients with significant bacteriuria. Most isolates occurred in hospitalized patients with indwelling urinary catheters and in patients with benign prostatic hypertrophy, diabetes and prostatectomy. Proper catheter care may improve infection control and reduce the morbidity of UTIs associated with Proteus spp.

Orrett F.A. et al. *Nosocomial infections in a rural regional hospital in a developing country: infection rates by site, service, cost, and infection control practices.* Infect Control Hosp Epidemiol. 1998; 19(2) : 136-40.p Abstract: OBJECTIVE: To assess the prevalence of nosocomial infections at a rural government hospital from 1992 to 1995. DESIGN: Retrospective review of data from 1992 to 1995 regarding rates of nosocomial infections, cost to government, and infection control practices. SETTING: 653-bed rural hospital providing primary and tertiary care. PATIENTS: Patients admitted to the hospital between 1992 and 1995 who were found with hospital-acquired infections during their stay. INTERVENTIONS: None. RESULTS: Over the 4-year period, 7,158 nosocomial infections were identified from 72,532 patients (10.0/100 admissions). High nosocomial infection rates were found on the intensive-care unit (67/100 admissions), urology (30/100 admissions), neurosurgery (29.5/100 admissions), and newborn nursery (28.4/100 admissions). Urinary tract infections (4.1/100 admissions) accounted for most nosocomial infections (42%), followed by postoperative wound infections (26.8%) with a rate of 2.6/100 admissions. Nosocomial pneumonias and bloodstream infections also were common with 13.2% and 8.0%, respectively. The highest rates occurred on the intensive-care unit for both pneumonia (26.4/100 admissions) and bloodstream infection (7.0/100 admissions). The cost to the government for nosocomial infections was estimated at US $697,000 annually (US $1=$6 Trinidad and Tobago). Poor infection control practices, inadequate handwashing facilities, lack of supplies, and nonexistent garbage cans on most wards were quite evident. CONCLUSIONS: Strict adherence to proper infection control practices, such as handwashing techniques, and improvement of facilities are crucial steps in preventing cross-infections in the hospital environment. Implementing these measures may substantially reduce the massive drain on the hospital budget in treating nosocomial infections. The saved revenue could go toward improvement of ward facilities and reduction of overcrowding, thus further reducing cross-infection.

Orrett F.A. et al. *The changing patterns of antimicrobial susceptibility of urinary pathogens in Trinidad.* Singapore Med J. 1998; 39(6) : 256-9.p Abstract: OBJECTIVE: The prevalence of antimicrobial resistance in urinary pathogens is increasing worldwide. Accurate bacteriologic records of culture results may provide guidance on empirical therapy before sensitivity patterns are available. We report the changing antibiograms of pathogens associated with urinary tract infections (UTI) over a 4-year period at a newly commissioned hospital complex diagnostic laboratory in Trinidad. METHODS: From January 1992 to December 1995, kept records of antibiograms of all urinary pathogens isolated were examined. Samples were derived from hospital sources (wards and out-patient clinics) and general practice sources (health centers and general practitioners). Quantitative bacteriologic cultures were performed according to standard laboratory procedures, and identification of isolates were based on Gram reaction, morphology and biochemical characteristics. Significant bacteriuria was defined as the presence of greater than 100,000 organisms per mL of a midstream urine specimen or more than 3000 bacteria per mL in a catheter specimen of a single specie. Antimicrobial sensitivities were done using the following antibiotics: norfloxacin, ampicillin, tetracycline, nitrofurantoin, gentamicin, co-trimoxazole (sulfamethoxazole-trimethoprim), trimethoprim, nalidixic acid, cephalexin and augmentin (amoxicillin-clavulanic acid). Control organism was E coli NCTC 10,418 strain. RESULTS: The total number of specimens for the 4-year period in hospital was 14,181 with an isolation rate of 17%, and a general practice isolation rate of 67% from a total of 5,088 specimens. E coli was the most frequent isolate in both hospital (40%) and general practice (30%). There was an increase isolation of P aeruginosa from community practice reflecting an increase in home care catheterised male patients. Resistance to tetracycline was most significant in hospital (99%) and general practice (81%). Similar trend was observed for trimethoprim in hospital, and co-trimoxazole in both practices. Resistance to ampicillin, augmentin and cephalexin was relatively stable over the 4-year period. CONCLUSION: We conclude that laboratories should encourage accurate bacteriologic record keeping of urinary isolates and their antibiograms to serve as guidance in empirical treatment in UTI. Also, urine microscopy may reduce the number of specimens sent for culture which are not cost-effective.

Ortendahl T. et al. *Mutans streptococci and incipient caries adjacent to glass ionomer cement or resin-based composite in orthodontics.* Am J Orthod Dentofacial Orthop. 1997; 112(3) : 271-4.p Abstract: Levels of mutans streptococci in plaque adjacent to orthodontic brackets retained with a glass ionomer cement (GIC) (Ketac-Cem) and a resin-based composite (CR) (Concise) were investigated, using the split mouth technique in 11 patients who, before treatment, had more than 10(5) CFU of these microorganisms. After full-term orthodontic treatment (mean 9.5 months), the percentage of mutans streptococci of total CFU count in plaque was lower adjacent to GIC-retained brackets (mean 3.9) than adjacent to CR-retained brackets (6.7), but the difference was not statistically significant. Two subjects harbored S. sobrinus. These subjects were the only ones who developed incipient caries during the orthodontic treatment. Incipient lesion formation occurred only adjacent to CR-retained brackets. This suggests that in patients who have relatively high salivary levels of mutans streptococci before treatment and especially in those who harbor S. sobrinus, the use of GIC for bonding may prevent incipient caries formation during orthodontic treatment.

Osato M.S. *Antimicrobial susceptibility testing for helicobacter pylori: sensitivity test results and their clinical relevance.* Curr Pharm Des. 2000; 6(15) : 1545-55.p Abstract: There are multiple test methodologies to determine the antibiogram of an organism. Standardized susceptibility test methods are based upon rapidly growing, aerobic microorganisms in which overnight incubation results in definitive endpoints. In vitro susceptibility testing for fastidious organisms that require complex media for growth, require incubation in atmospheres other than ambient air, or are slow-growing (anaerobes, mycobacteria, filamentous fungi) are problematic and in general are not standardized. H. pylori falls into this category of troublesome organisms. For the microaerobic organism H. pylori, testing is chal-

lenging because the organism grows slowly even under optimal culture conditions. Recently the National Committee for Clinical Laboratory Standards (NCCLS) approved the agar dilution method as the test of choice for testing H. pylori. While not entirely reliable in predicting the outcome of treatment for metronidazole resistant organisms, the resistance determined for clarithromycin by this method generally predicts treatment failure. Quality control breakpoints for H. pylori ATCC 43504 were established and breakpoints for clarithromycin were approved by the NCCLS in 1999. Breakpoints are minimum inhibitory concentrations (MIC) of a drug at which an organism is deemed either susceptible or resistant to the antibiotic using standard dosing regimens containing that drug. Significant progress has been made with respect to development of tests to detect antimicrobial resistance, but there still remains no consensus as to the breakpoints for agents used in the treatment of H. pylori infection other than clarithromycin. This article will address the controversies associated with the reporting of antibiotic resistance data and the interpretation of these data.

Osato M.S. et al. *Metronidazole and clarithromycin resistance amongst Helicobacter pylori isolates from a large metropolitan hospital in the United States.* Int J Antimicrob Agents. 1999; 12(4) : 341-7.p Abstract: BACKGROUND: Metronidazole and clarithromycin-based therapies are among the most efficacious treatment regimens for H. pylori infection. Resistance to metronidazole or clarithromycin is associated with impaired therapy with these agents. We conducted a retrospective review of susceptibility data to determine the frequency of primary metronidazole and clarithromycin resistance among H. pylori isolates from a single metropolitan hospital in the United States. The database comprised 933 patients who presented at the Digestive Diseases Clinic at the Veterans Affairs Medical Center in Houston between September 1988 and January 1997 with complaints of dyspepsia, abdominal pain and peptic ulcer disease. One hundred and seventy-nine of these patients had both pharmaceutical records available for evaluation and culture and antimicrobial susceptibility data for analysis. The MICs were determined by both E-test and broth microdilution tests. The frequency of primary metronidazole resistance was 37.4% (67/179). The level of primary clarithromycin resistance was 6.1%. Dual metronidazole and clarithromycin resistance was present in approx. 3%. The high level of primary metronidazole and clarithromycin resistance in H. pylori isolates from this metropolitan hospital is such that antimicrobial susceptibility data should be available so that informed choice can be made for specific eradication therapies, especially in patients who fail treatment.

Osmon D.R. *Antimicrobial prophylaxis in adults.* Mayo Clin Proc. 2000; 75(1) : 98-109.p Abstract: Antimicrobial prophylaxis is used by clinicians for the prevention of numerous infections, including sexually transmitted diseases, human immunodeficiency virus infection, tuberculosis, rheumatic fever, recurrent cellulitis, meningococcal disease, recurrent uncomplicated urinary tract infections in women, spontaneous bacterial peritonitis in patients with cirrhosis, influenza, malaria, infective endocarditis, pertussis, plague, anthrax, early-onset group B streptococcal disease in neonates, and animal bite wounds. Certain opportunistic infections such as Pneumocystis carinii pneumonia in immunocompromised patients also can be effectively prevented with primary antimicrobial prophylaxis. Perioperative antimicrobial prophylaxis is recommended for various surgical procedures to prevent surgical site infection. Optimal antimicrobial agents for prophylaxis are bactericidal, nontoxic, inexpensive, and active against the typical pathogens that cause surgical site infection postoperatively. To maximize its effectiveness, intravenous perioperative prophylaxis should be given within 30 to 60 minutes before the time of surgical incision. Antibiotic prophylaxis should be of short duration to decrease toxicity, antimicrobial resistance, and excess cost.

Osorio R. et al. *Environmental microbial contamination. Pilot study in a dental surgery.* Int Dent J. 1995; 45(6) : 352-7.p Abstract: Environmental contamination by bacterial aerosols occurs every day in the dental surgery. The aim of this study was to determine bacterial levels in five different areas of a dental surgery during ultrasonic scaling procedures using bacterial cultures. Two areas with markedly different amounts of infective aerosols were identified. The role of the air conditioning system was also assessed. There was evidence that the air conditioning system could act as a vehicle for the transmission of microorganisms.

Osterblad M. et al. *Antimicrobial and mercury resistance in aerobic gram-negative bacilli in fecal flora among persons with and without dental amalgam fillings.* Antimicrob Agents Chemother. 1995; 39(11) : 2499-502.p Abstract: Antimicrobial resistance is more widespread than can be accounted for as being a consequence of the selection pressure caused by the use of antibiotics alone. In this study, we tested the hypothesis that a high mercury content in feces might select for mercury-resistant bacteria and thus for antimicrobial resistance linked to mercury resistance. Three subject groups with different exposures to dental amalgam fillings were compared. None of the subjects had taken antimicrobial agents during the three preceding months or longer. The group exposed to dental amalgam (n = 92) had 13 times more mercury in feces than the group that had never been exposed to amalgam (n = 43) and the group whose amalgam fillings had been removed (n = 56). No significant differences in either mercury resistance or antibiotic resistance in the fecal aerobic gram-negative flora of these subject groups were seen. The following antimicrobial resistance frequencies were detected with a replica plating method: > or = 1% resistance was seen in 40% of the subjects for ampicillin, 14% of the subjects for cefuroxime, 6% of the subjects for nalidixic acid, 14% of the subjects for trimethoprim, 19% of the subjects for sulfamethoxazole, and 25% of the subjects for tetracycline. The amount of mercury in feces derived from amalgam was not selective for any resistance factors in aerobic gram-negative bacteria, but antimicrobial resistance was widespread even among healthy subjects with no recent exposure to antibiotics.

Osterblad M. et al. *Screening for antimicrobial resistance in fecal samples by the replica plating method.* J Clin Microbiol. 1995; 33(12) : 3146-9.p Abstract: Replica plating can be used for the detection of antibiotic resistance in normal flora. We have evaluated this application of the replica plating method by comparing it with a five-colony method. The replica plating method uses a single plate for each antibiotic, with a concentration just above that for borderline resistance. By the five-colony method, five colonies per sample were picked, chosen to represent all different colony morphologies present, and MICs were determined by a standard agar dilution method. The gram-negative, aerobic floras of 131 fecal samples were screened for resistance to ampicillin, cefuroxime, nalidixic acid, trimethoprim, sulfamethoxazole, and tetracycline by both methods. The rate of resistance detection by the two methods did not differ statistically for any of the antibiotics tested. The breakpoint concentrations used for the replica plates in the study gave results similar to those produced by the agar dilution method and the breakpoint values of the National Committee for Clinical Laboratory Standards and can thus be recommended. As the only currently used resistance detection method, replica plating facilitates an exact determination of the percentage of resistant colonies/total number of colonies (between 1 and 100%) in a sample. This revealed an uneven distribution, with only 23% of the samples having resistance frequencies in the range of 10 to 85%; usually, the resistant flora either was a small minority or was very dominant in samples with resistance. This phenomenon was present for all of the antibiotics.

Ostroff S.M. et al. *Resistance patterns of Streptococcus pneumoniae and Haemophilus influenzae isolates recovered in Egypt from children with pneumonia. The Antimicrobial Resistance Surveillance Study Group.* Clin Infect Dis. 1996; 23(5) : 1069-74.p Abstract: Treatment of childhood pneumonia in developing countries requires knowledge of susceptibility patterns for Streptococcus pneumoniae and Haemophilus

influenzae. Between October 1991 and April 1993, a surveillance survey of antimicrobial resistance was performed at two fever hospitals in Egypt; nasopharyngeal swab and blood specimens obtained from 1,635 children with pneumonia were cultured for these organisms. Susceptibility testing of these organisms was performed. At least one of these organisms was isolated from nasopharyngeal swab specimens from 73% of the children; 3.7% of blood cultures were positive. For S. pneumoniae strains, 70.9% of nasopharyngeal isolates were calculated to be susceptible to penicillin vs. 77.6% of blood isolates; the percentages of isolates susceptible to co-trimoxazole were 73.0% and 75.0%, respectively. For H. influenzae strains, 93.0% of nasopharyngeal isolates were calculated to be susceptible to ampicillin vs. 100% of blood isolates; the percentages of isolates susceptible to co-trimoxazole were 84.9% and 100%, respectively. Although most S. pneumoniae and H. influenzae strains associated with childhood pneumonia in Cairo were susceptible to penicillins and co-trimoxazole, antimicrobial resistance did not occur.

Oteo J. et al. *High prevalence of resistance to clindamycin in Bacteroides fragilis group isolates.* J Antimicrob Chemother. 2000; 45(5) : 691-3.p Abstract: Susceptibility to anti-anaerobic agents in the Bacteroides fragilis group varies according to the geographical region studied. In recent years there has been a reduction in the susceptibility of such isolates, particularly to antibiotics such as clindamycin and cefoxitin. The antimicrobial susceptibilities of 100 isolates of the B. fragilis group isolated in 1998 from faecal samples of healthy people to clindamycin and five other anti-anaerobic agents were determined. Meropenem, metronidazole and trovafloxacin showed excellent activity against all isolates. The efficacy of cefoxitin was low, with only 46% of isolates susceptible. A high prevalence of resistance to clindamycin (49% of isolates) was observed.

Oto S. et al. *Slime production by coagulase-negative staphylococci isolated in chronic blepharitis.* Eur J Ophthalmol. 1998; 8(1) : 1-3.p Abstract: BACKGROUND: The purpose of the study was to determine the impact of slime-producing strains of coagulase-negative staphylococci (CNS) on non-ulcerative blepharitis. Formerly considered harmless organisms, CNS are now recognised as opportunistic pathogens. Although these microorganisms are a component of normal conjunctival flora, they often produce the typical signs and symptoms of chronic staphylococcal blepharoconjunctivitis. Certain strains produce a polysaccharide extracellular material called "slime". Slime production is considered to be associated with the virulence of the organism. METHODS: Swabs were taken from the lids of 38 eyes of 19 patients with chronic non-ulcerative blepharitis and cultured for CNS. A group of 42 normal control eyes were similarly sampled. The strains of CNS isolated from 26 eyes (68.4%) of the patients with blepharitis and 25 eyes (59.5%) of the normal subjects were studied for slime layer production. RESULTS: No significant difference was found between normal subjects and patients in the incidence of slime producing CNS strains from the conjunctiva. The antibiotic sensitivity profiles of the slime-producing strains were no different from the slime-negative isolates in the blepharitis (p=0.85) and normal group (p=0.25). CONCLUSIONS: Our data suggest that slime production by CNS does not play a significant role in the pathogenesis of staphylococcal blepharitis.

Otth Rademacher L. et al. *Pesquisa de cepas de enterococcus sp. con altos níveles de resistencia a los aminoglicósidos.* Cuad. cir. 1999; 13(1) : 42-5.p Abstract: En las últimas décadas ha habido un aumento en la frecuencia de infecciones producidas por enterococcus sp., situándose entre los patógenos nosocomiales más comúnmente reportados. En forma simultánea se está reportando una mayor resistencia a los antimicrobianos, en especial a altos niveles de aminoglicósidos y a vancomicina. Entre marzo y julio de 1998 se recolectó en la ciudad de Valdivia, 34 cepas de enterococcus sp, aisladas de muestras clínica provenientes del Laboratorio Central del Hospital Clínico Regional de Valdivia y de un laboratorio privado, para determinarles altos niveles de resistencia a los aminoglicósidos (ANRA) por el método de dilución en agar y sensibilidad a vancomicina por el método de difusión en agar. El 23,8 por ciento de las cepas hospitalarias y el 7,7 por ciento de las extrahospitalarias presentaron ANR a estreptomicina. Para gentamicina se obtuvo un 4,8 por ciento de cepas de origen hospitalario con ANR, en cambio no se encontró cepas de origen extrahospitalario resistentes a este antibiótico. Todas fueron sensibles a vancomicina (AU).

Otth Rademacher L. et al. *Susceptibilidad antimicrobiana de bacilos gram negativos aislados de muestras clínicas a cuatro cefalosporinas.* Cuad. cir. 1995; 9(1) : :40-3.p Abstract: Se estudio la susceptibilidad cuantitativa in vitro de 335 cepas de bacilos Gram negativos a 4 tipos de cefalosporinas: cefradina, cefuroxima, cefotaxima y fefoperazona, usando el método de Ericsson y Sherris. Los resultados obtenidos nos muestran que la cefalosporina más activa fue cefotaxima y que los grupos bacterianos más resistentes fueron Pseudomonas, Proteus, Providencia y Morganella (AU).

Ottone S. et al. *[Infections from extemporaneous catheters for hemodialysis. Experience in a center].* Minerva Urol Nefrol. 1998; 50(3) : 179-83.p Abstract: BACKGROUND AND AIMS: This study reports a retrospective evaluation of the predominance of infection in 67 dual lumen central venous catheters (CVC), 35 of which were positioned in the femoral vein by the nephrological team and 32 in the subclavian vein by anesthetists. METHODS: The microorganisms responsible for infection, the prevalence of clinically symptomatic infections, the relationship between CVC-correlated infection and the time the catheter remained inserted were evaluated, together with a comparison between the two different insertion sites. RESULTS: Culture tests, performed using Maki's semiquantitative technique, gave positive results in 16/67 (23.8%) cases. The main pathogenic agents found were Staphylococcus epidermidis (37.5%) and Staphylococcus aureus (31.2%). In 3/16 cases (18.78%) infections were clinically symptomatic. The mean permanence of CVC with positive cultures was not statistically different to the mean permanence of CVC with negative cultures (22.44 +/- 13.48 vs 18.38 +/- 17.76). The microorganisms isolated on femoral and subclavian catheters showed a comparable distribution and the prevalence of infection was not statistically different in the two insertion sites. CONCLUSIONS: In conclusion, in the absence of infection, the authors tend to keep working catheters in the site, thus avoiding repeated invasive manoeuvres for replacement and/or repositioning, whereas in the presence of suspected systemic infection they feel it is more prudent to remove the CVC without waiting for the results of the hemoculture, starting first empiric and then specific antibiotic treatment on the basis of the antibiogram.

Otvos L. Jr et al. *Insect peptides with improved protease-resistance protect mice against bacterial infection.* Protein Sci. 2000; 9(4) : 742-9.p Abstract: At a time of the emergence of drug-resistant bacterial strains, the development of antimicrobial compounds with novel mechanisms of action is of considerable interest. Perhaps the most promising among these is a family of antibacterial peptides originally isolated from insects. These were shown to act in a stereospecific manner on an as-yet unidentified target bacterial protein. One of these peptides, drosocin, is inactive in vivo due to the rapid decomposition in mammalian sera. However, another family member, pyrrhocoricin, is significantly more stable, has increased in vitro efficacy against gram-negative bacterial strains, and if administered alone, as we show here, is devoid of in vitro or in vivo toxicity. At low doses, pyrrhocoricin protected mice against Escherichia coli infection, but at a higher dose augmented the infection of compromised animals. Analogs of pyrrhocoricin were, therefore, synthesized to further improve protease resistance and reduce toxicity. A linear derivative containing unnatural amino acids at both termini showed high potency and lack of toxicity in vivo and an expanded cyclic analog displayed broad activity spectrum in vitro. The bioactive conformation of native pyrrhocoricin was determined by nuclear magnetic resonance spectroscopy, and similar to drosocin, reverse turns were identified as

pharmacologically important elements at the termini, bridged by an extended peptide domain. Knowledge of the primary and secondary structural requirements for in vivo activity of these peptides allows the design of novel antibacterial drug leads.

Ovalle A. et al. *Microbiología aislada en la rotura prematura de membranas de pretérmino: relación con morbilidad infecciosa materna neonatal e intervalo rotura de membranas-parto.* Rev. chil. obstet. ginecol. 1995; 60(4) : 252-62.p Abstract: Nuestro objetivo fue conocer la prevalencia de la flora microbiana aislada en la invasión microbiana de la cavidad amniótica e infección cervicovaginal en la rotura de membranas de pretérmino y su influencia sobre la infección materna-neonatal y la duración de la gestación (AU).

Overman T.L. et al. *Antimicrobial susceptibility patterns of Aeromonas jandaei, A. schubertii, A. trota, and A. veronii biotype veronii.* J Clin Microbiol. 1999; 37(3) : 706-8.p Abstract: Fifty-six isolates of four Aeromonas species, which have been documented as causative agents of human infections or isolated from human clinical specimens, were subjected to antimicrobial susceptibility testing using a MicroScan WalkAway conventional (overnight incubation) gram-negative panel. The four species tested and the number of isolates of each were as follows: Aeromonas jandaei, 17; A. schubertii, 12; A. trota, 15; and A. veronii biotype veronii, 12. All isolates of A. trota were susceptible to all antimicrobial agents tested, except cefazolin (20% of isolates were resistant) and cefoxitin (13% of isolates were resistant). All isolates of A. schubertii and A. veronii biotype veronii, as well as 88% of A. jandaei isolates, were resistant to ampicillin. Resistance to ampicillin-sulbactam ranged from 25% of A. schubertii strains to 100% of A. veronii biotype veronii strains. Cefazolin resistance ranged from 17% of A. veronii biotype veronii isolates to 59% of A. jandaei isolates. Imipenem resistance was detected in 65% of A. jandaei strains and 67% of A. veronii biotype veronii strains. A. jandaei displayed resistance to piperacillin and ticarcillin in 53 and 71% of the isolates, respectively. A. veronii biotype veronii strains were 100% susceptible to piperacillin and 100% resistant to ticarcillin. These antibiogram data may be useful in establishing the identification of these four species when members of the genus Aeromonas are isolated from human clinical sources.

Oya S. et al. *[In vitro antimicrobial activity of a new quinolone, levofloxacin, against atypical mycobacteria].* Kekkaku. 1995; 70(11) : 615-9.p Abstract: We measured th in vitro antimicrobial activity of a new quinolone, levofloxacin (LVFX) against seven clinically isolated species of atypical mycobacteria, including 30 strains of M. avium complex. 8 of M. fortuitum, 4 of M. scrofulaceum, 2 of M. kansasii, 2 of M. gordonae, and 1 of M. chelonae (subsp chelonae). LVFX showed a potent antimicrobial activity against M. kansasii, M. gordonae and M. chelonae (subsp chelonae). In addition, it was suggested that LVFX may be effective for the treatment of infections caused by M. avium complex, since satisfactory antimicrobial activity was displayed against some strains of M. avium complex. Considering the fact that LVFX shows good concentration levers in sputum, this drug could be used in the chemotherapy against the infection with M. avium complex.

Oyonarte Gómez M. *Las subespecialidades médicas en Chile: situación actual.* Rev. méd. Chile. 1996; 124(4) : 493-500.p Abstract: There is no reliable registry of medical subspecialties in Chile. According to the records of the Autonomous National Corporation for Certification of Medical Specialties (CONACEM), the largest number of certifications is in internal medicine (n=681), followed by cardiology (n=153), respiratory medicine (n=106), gastroenterology (n=93), endocrinology (n=77), rheumatology (n=55), hematology (n=50), nephrology (n=50), and infectious diseases (n=31). Over 55 percent of those certified in internal medicine and 70 percent of those certified in medical subspecialties (except nephrology) live in the metropolitan region of Santiago. Almost 80 percent of university-trained internists have received their training at the University of Chile (1952-1995), whereas 52 percent of university-trained subspecialists have been trained at the Catholic University of Chile. A sizeable number of non official training programs are conducted at some universities at variance with their own official training policies. In internal medicine, a larger number of specialists have been trained by the universities that are certified by CONACEM, whereas the converse is true for medical subspecialists. More than 80 percent of the internists in Chile work for the Ministry of Health, who cares for 70 percent of the country's population. The best internist population ratio is in Arica and Valdivia and the poorest one in Arauco and in Vi a del Mar/Quillota. According to estimations done by the Santiago Medical Society and its subspecialty affiliate societies, an adequate proportion of internists would be 1 for every 10.000 inhabitants and for subspecialists, 1 for every 100.000 inhabitants. More information is needed about the ideal distribution throughout the country. CONACEM needs to be strengthened, the universities should be able to certify non-university training centers and the migration of subspecialists out of Santiago should be encouraged (AU).

Ozcelik U. et al. *Sputum bacteriology and its antibiotic susceptibilities in Turkish cystic fibrosis patients.* Turk J Pediatr. 1996; 38(3) : 281-8.p Abstract: To identify lower respiratory tract pathogens and their in-vitro antibiotic susceptibilities in Turkish cystic fibrosis (CF) patients, a total of 383 sputum cultures were evaluated from 45 CF children in 168 symptomatic and 215 control periods over 25 months. Microorganisms were isolated in 252 of the cultures. The isolation rate was 82 percent for symptomatic periods and 53 percent for control periods. The most common microorganism was P. aeruginosa in the symptomatic period and S. aureus in the control period. Other microbiological species included E. coli, H. influenzae, K. pneumoniae, S. epidermidis, beta-hemolytic streptococcus, H. parainfluenzae, K. oxytoca, E. aerogenes and E. aglomerans. P. cepacia was not found. In 20 cultures more than one microorganism was isolated at the same time. In in-vitro conditions, high susceptibility rates were detected to amikacin, ciprofloxacin and ceftazidim for P. aeruginosa; cefuroxime, ceftriaxone, amikacin, cephalothin, chloramphenicol and erythromycin for S. aureus; amikacin and ceftriaxone for E. coli; ampicillin-sulbactam, amoxicillin-clavulanate, cefuroxime, ceftazidime, ceftriaxone and aztreonam for H. influeanzae; and aztreonam and amikacin for K. pneumoniae. Lower respiratory tract pathogens and their antibiotic susceptibilities in Turkish CF children were not significantly different from those indicated previously in the literature.

Ozdamar A. et al. *In vitro antimicrobial activity of silicone oil against endophthalmitis-causing agents.* Retina. 1999; 19(2) : 122-6.p Abstract: PURPOSE: To investigate the antimicrobial activity of silicone oil against endophthalmitis-causing agents in vitro. METHODS: The antimicrobial activity of silicone oil was tested on Staphylococcus aureus, Staphylococcus epidermidis, Pseudomonas aeruginosa, Candida albicans, and Aspergillus spp. The bacteria and fungi were separately inoculated into 1,300 centistokes silicone oil. Control inoculations were done in two different media: physiologic saline and brain-heart infusion (BHI) for bacteria and Sabouraud broth and physiologic saline for fungi. From each medium, 0.001-mL samples were taken and plated in Petri dishes. After overnight incubation, colony-forming units (CFUs) were enumerated. Culturing from the initially prepared specimens, incubating overnight, and counting CFUs was repeated until no growth of microorganisms was seen in the silicone oil-containing media. Macroscopic photography of the colonies and light microscopic photography of microorganisms were performed. RESULTS: All the microorganisms showed an apparent decrease in CFUs, with elimination between 7 and 21 days in silicone oil. Colony-forming units of microorganisms remained stable in physiologic saline during the study, with the exception of gradual decrease in CFUs of S. aureus and S. epidermidis from the beginning of the third day. In BHI and Sabouraud broth, both bacteria and fungi showed a growth pattern

that was compatible with the growth curve of microorganisms. CONCLUSION: Silicone oil has an antimicrobial activity against S. aureus, S. epidermidis, P. aeruginosa, C. albicans, and Aspergillus spp., which are common endophthalmitis-causing agents.

Ozer-Arasli A. et al. *[Endophthalmitis after cataract surgery: long-term follow-up].* Klin Monatsbl Augenheilkd. 1997; 211(3) : 178-82.p Abstract: BACKGROUND: Endophthalmitis is a serious complication after cataract surgery. PATIENTS AND METHODS: Therefore, a retrospective study was performed by reviewing patient-records of all cases of end-ophthalmitis after catract surgery that were treated at the department of ophthalmology of the University Hospital in Mainz between January 1986 and December 1995. RESULTS: 44 eyes were treated for endophthalmitis. Of those, 38 had been referred. In 15 eyes cataract surgery was performed on an outpatient basis. In 20 cases the onset of end-ophthalmitis occurred within the first postoperative week. We isolated staphylococcus epidermidis (14), staphylococcus aureus (4), other gram-positive microorganisms (15), gram-negative bacteria (2) and candida (1). As risk factors we found a wound dehiscence (14), an intraoperative loss of vitreous (11), diabetes (11), skin-diseases like rosacea or neurodermatitis (6). In 36 cases a vitrectomy was performed. After a mean follow-up of 25 +/- 22 months 26 patients had a visual acuity of 0.05 or better. CONCLUSION: Gram-positive bacteria showed to be the most common causetive microorganisms. In a third of all cases the sample demonstrated no growth. More than 80% of the eyes were treated by vitrectomy. About 60% of the patients obtained a visual acuity of 0.05 or better.

Ozturk F. et al. *Penetration of topical and oral ofloxacin into the aqueous and vitreous humor of inflamed rabbit eyes.* Int J Pharm. 2000; 204(1-2) : 91-5.p Abstract: PURPOSE: This study aimed to investigate the penetration of topical and oral ofloxacin into aqueous humor and vitreous humor in post-traumatic endophthalmitis model in rabbits. METHODS: A standardized intraocular infection after penetrating injury was made in the right eyes of 16 rabbits. Intraocular infection was induced by intravitreal injection of a suspension of Staphylococcus aureus. The intact left eyes were maintained as controls. The animals were divided randomly into two groups. (1) In the topical group, two drops of ofloxacin 0.3% eyedrops were instilled to both eyes every 30 min for 4 h. (2) In the topical-oral group, two doses of 25 mg/kg of ofloxacin at 12-h intervals were given orally, then the protocol of the first group was applied. Aqueous and vitreous humor samples were taken 30 min after the last drop. Ofloxacin concentrations were measured by using HPLC. RESULTS: Mean aqueous levels of ofloxacin in control eyes were: 3.25 +/- 2.55 microg/ml in topical group. 4.58 +/- 5.39 microg/ml in topical-oral group. Mean aqueous levels in inflamed eyes were: 5.21 +/- 4.55 microg/ml in topical group, 10.34 +/- 8.88 microg/ml in topical-oral group. Mean vitreous levels of ofloxacin in control eyes were: 0.17 +/- 0.07 microg/ml in topical group, 1.30 +/- 1.23 microg/ml in topical-oral group. Mean vitreous levels in inflamed eyes were: 0.35 +/- 0.22 microg/ml in topical group, 3.48 +/- 2.69 microg/ml in topical-oral group. There was no significant difference among the groups ($P > 0.05$), however. CONCLUSIONS: The result of this study suggests that oral supplementation of ofloxacin to topical instillation increased the ocular levels of ofloxacin in the post-traumatic endophthalmitis model. Mean drug concentrations in aqueous and vitreous humors were above the 90% minimum inhibitory concentrations (MIC90) for most of the common microorganisms causing endophthalmitis in all eyes, except in the vitreous humors of the intact eyes instilled topically.

Ozturk M.K. et al. *Convulsions in childhood shigellosis and antimicrobial resistance patterns of shigella isolates.* Turk J Pediatr. 1996; 38(2) : 183-8.p Abstract: Drug resistance patterns of 68 shigella strains were investigated prospectively in Kayseri during a period of approximately two years. The resistance was highest with ampicillin (58.8%) followed by co-trimoxazole (50%) and ampicillin-sulbactam (13%). Only 2.8 percent of cases were resistant to gentamicin, and all serogroups were sensitive to ceftriaxone. We conclude that in children with severe shigellosis, treatment with ceftriaxone is effective and better than ampicillin and co-trimoxazole for obtaining a clinical cure. We followed 18 children who experienced convulsions associated with shigellosis. Only one child had a history of febrile convulsions, and two children had histories of convulsive disorders. The majority of the children had generalized, self-limited convulsions which lasted less than ten minutes. Due to the benign and self-limited nature of most of the convulsions, neither diagnostic procedures nor drug therapy are usually necessary. These measures should, however, be considered in complicated cases characterized by focal or prolonged seizures.

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Paavonen J. et al. *Chlamydial pelvic inflammatory disease.* Hum Reprod Update. 1996; 2(6) : 519-29.p Abstract: Pelvic inflammatory disease (PID) is the most important complication present in the female lower genital tract, causing major medical, social and economic problems. Although PID can be caused by multiple microorganisms, it results most frequently from the ascent of sexually transmitted Chlamydia.trachomatis or Neisseria gonorrhoeae infections from the cervix to the upper genital tract. The importance of cervical chlamydial infection in the pathogenesis of PID is well recognized. Recent data from many developed countries have shown a striking decrease in the incidence of gonococcal infections, while the rates of chlamydial infections remain high in most countries. Complications of PID are common and usually irreversible. Emerging evidence suggests that universal or selected screening of defined populations for cervical chlamydial infection leads to a dramatic reduction in the incidence of PID. Recent technological advances should further enhance efforts to prevent chlamydial infection and PID. Gene amplification-based diagnostic tests, screening by testing first-void urine, and single dose antimicrobial therapy greatly facilitate chlamydia control programmes. Thus, screening for chlamydia is the key approach in the secondary prevention of PID. The obvious challenge is to make screening for chlamydia the standard for health care for young, sexually active individuals. Since PID is the most important consequence of sexually transmitted bacterial infections, it is also imperative to develop better treatments to prevent the long-term sequelae of this disease. The development and implementation of new and effective intervention programmes for prevention and control of PID is one of the major challenges for the year 2000 and beyond.

Pacheco D. et al. *Unilateral breast enlargement secondary to right brachiocephalic vein occlusion.* Am J Kidney Dis. 2000; 35(5) : E26.p Abstract: We describe a 56-year-old woman who received dialysis through a right jugular catheter and developed a progressive right breast enlargement 1 year after arteriovenous graft shunt construction in the right forearm. Arm edema was not observed. A fistulography showed retrograde long thoracic and lateral thoracic veins flow secondary to a right brachiocephalic vein occlusion. Breast enlargement disappeared completely 2 weeks after a transfemoral balloon angioplasty and stent placement.

Pacini N. et al. *Antimicrobial susceptibility tests on anaerobic oral mixed cultures in periodontal diseases.* J Clin Periodontol. 1997; 24(6) : 401-9.p Abstract: The ecosystem of the dental plaque in periodontal diseases is very complex: the study of such micro-organisms, which are mostly strict anaerobes, requires the use of specific techniques under conditions of strict anaerobiosis. The aim of the present study was to design a rapid method to evaluate the activity of antimicrobials on mixed bacterial plaque of subjects with periodontal diseases. The study was carried out using a computerised instrument generally used for simultaneous diagnostic tests with aerobic bacteria.

Operative and methodological modifications were made to obtain conditions of strict anaerobiosis and the balanced growth of all the microbial forms present in the mixed cultures of the plaque. Penicillins and cephalosporins were active on all the samples, whereas colistin, gentamicin, kanamycin and nalidixic acid showed no activity. Clindamycin, tetracycline, erythromycin and penicillin G were effective only against some samples. The activity of the antimicrobials towards isolated strains was analogous to that towards the corresponding mixed culture.

Page J. et al. *Where do developing World clinicians obtain evidence for practice: a case study on pneumonia.* J Clin Epidemiol. 2000; 53(7) : 669-75.p Abstract: There are few data on the practice of evidence based medicine in the developing world, nor on the actual sources of evidence that clinicians use in practice. To test the hypothesis that there was variation between and within developing countries in the proposed management of a patient with hospital acquired pneumonia, and that part of the variation can be explained by the sources of evidence used. Questionnaire responses to hypothetical case history. Investigators from 6 centres within the International Clinical Epidemiology Network (INCLEN) in China, Thailand, India, Egypt, and Kenya. Doctors chosen to represent primary and secondary hospital practice in the regions of the study centres. Investigations and initial treatments which would be ordered for a hypothetical 60-year-old woman who develops pneumonia 5 days after hospital admission, whether local data on antibiotic sensitivities are available and where information would be obtained to guide management. Chest x-ray and sputum gram stain/culture were consistently the most commonly ordered investigations, there being much greater variation in the initial treatment choices with either penicillin, a third-generation cephalosporin or aminoglycoside being the most popular choice. Textbooks were the commonest form of information source, and access to a library, textbooks and journals were statistically significantly associated with appropriate choice of investigations, but not treatment. Access to local antibiotic sensitivities was associated with appropriate initial treatment choice. Improving access to information in the literature and to local data may increase the practice of evidence-based medicine in the developing world.

Page S. et al. *Management of septicaemic infants during long-term parenteral nutrition.* Int J Clin Pract. 2000; 54(3) : 147-50.p Abstract: Young infants, particularly following gastrointestinal surgery, are at high risk of septicaemia during parenteral nutrition. Febrile illness in the absence of focal infection inevitably raises suspicion of central venous catheter sepsis and poses the following dilemma: remove the catheter (which may then prove uninfected) and lose venous access, or leave the catheter and risk clinical deterioration? We examined retrospectively the isolates from blood culture during febrile episodes in 13 children who received long-term (> 2 months) parenteral nutrition via a central venous catheter, and assessed the effectiveness of through-catheter antibiotic treatment during 76 episodes of blood culture positive sepsis. Coagulase-negative Staphylococci accounted for only 16% of positive isolates, with yeasts accounting for 5%, and Gram-negative organisms accounting for 46%, suggesting that infection was often associated with bacterial translocation from the gastrointestinal tract. Treatment with the central venous catheter left in situ was successful in resolving infection in 53 (70%) of septic episodes. These findings indicate that, in this specific group of patients, through-catheter antibiotic treatment is often effective in treating septicaemia. When long-term venous access is essential, this approach should be tried before recourse to central venous catheter removal.

Paget C.J. et al. *Incidence and pathophysiologic significance of infected carotid artery plaque.* Ann Vasc Surg. 1997; 11(2) : 129-32.p Abstract: It is unknown whether an association exists between infectious microorganisms and atherosclerosis. Eighty consecutive patients undergoing carotid endarterectomy were studied to detect for bacterial or virus infections in removed carotid atherosclerotic plaques. Twenty-one patients (25%) were found to have positive cultures for bacteria of the carotid plaques. Three patients (4%) did not have bacterial contamination of controlled cultures of the skin. Of these three patients, two grew diptheroids and one grew staphylococcus. The control cultures of the skin demonstrated that 25 patients (31%) grew diphtheroids and 29 (36%) grew staphylococcus. Five patients grew both organisms. There was no evidence of colonization within the atheromatous plaque material in histologic studies of the three patients that had positive cultures of their plaque. All viral cultures were negative. The positive carotid cultures found were most likely due to contamination from the skin. This study demonstrates the unlikelihood of bacterial or virus infections as either an etiologic or a pathogenetic factor in carotid artery atherogenesis.

Pai V.B. et al. *Duration of penicillin prophylaxis in sickle cell anemia: issues and controversies.* Pharmacotherapy. 2000; 20(1) : 110-7.p Abstract: Functional asplenia occurs in 94% of patients with homozygous sickle cell anemia by 5 years of age and may result in fatal septicemia due to encapsulated microorganisms such as Streptococcus pneumoniae. Penicillin prophylaxis in these patients significantly reduces the risk of septicemia; however, continuation of prophylaxis beyond 5 years of age is controversial, since the risk of developing septicemia is reduced after this age and prolonged prophylaxis may lead to emergence of penicillin resistance. Although reports of penicillin-resistant pneumococci in patients receiving penicillin prophylaxis are conflicting, the prevalence of these organisms in the general population in North America increased from 5% in 1989 to more than 35% in 1997. Discontinuation of prophylaxis after age 5 years may be recommended because of lack of benefit, difficulty maintaining compliance, reduced risk of developing pneumococcal bacteremia after that age, and increase in prevalence of penicillin-resistant pneumococci worldwide.

Paju S. et al. *Heterogeneity of Actinobacillus actinomycetemcomitans strains in various human infections and relationships between serotype, genotype, and antimicrobial susceptibility.* J Clin Microbiol. 2000; 38(1) : 79-84.p Abstract: Actinobacillus actinomycetemcomitans, an oral pathogen, only occasionally causes nonoral infections. In this study 52 A. actinomycetemcomitans strains from 51 subjects with nonoral infections were serotyped and genotyped by arbitrarily primed PCR (AP-PCR) to determine whether a certain clone(s) is specifically associated with nonoral infections or particular in vitro antimicrobial susceptibility patterns. The promoter structure of leukotoxin genes was additionally investigated to find the deletion characteristic of highly leukotoxic A. actinomycetemcomitans strains. The nonoral A. actinomycetemcomitans strains included all five known serotypes and nonserotypeable strains, the most common serotypes being b (40%) and c (31%). AP-PCR distinguished 10 different genotypes. A. actinomycetemcomitans serotype b strains were more frequently found in blood samples of patients with bacteremia or endocarditis than in patients with focal infections. One AP-PCR genotype was significantly more frequently found among strains originating in focal infections than in blood samples. Resistance to benzylpenicillin was significantly more frequent among A. actinomycetemcomitans serotype b strains than among strains of other serotypes. No differences in the leukotoxin gene promoter region or benzylpenicillin resistance between nonoral and oral A. actinomycetemcomitans strains were observed. Nonoral A. actinomycetemcomitans strains showed great similarity to the oral strains, confirming that the oral cavity is the likely source of nonoral A. actinomycetemcomitans infections. The predominance of serotype b strains in endocarditis and bacteremia supports the hypothesis of a relationship between certain A. actinomycetemcomitans clones and some nonoral infections. The mechanisms behind the exceptionally high rate of occurrence of benzylpenicillin resistance among A. actinomycetemcomitans serotype b strains are to be elucidated in further studies.

Palacio Patiño M.d.R. et al. *Resistencia a los antibioticos de patógenos bacterianos aislados de infecciones sistémicas : estudio cooperativo.* Rev. méd.

Urug. 1998; 14(2) : 120-33.p Abstract: La emergencia bacteriana a diferentes antibióticos constituye un problema alarmante. En la situación actual, para un adecuado tratamiento de pacientes con infecciones severas, es vital la correcta identificación del patógeno y el estudio de su patrón de sensibilidad. Con ese objetivo, se ralizó una experiencia piloto en la que participaron los laboratorios de bacteriología clínica de tres hospitales-centinela, en colaboración con el Departamento de laboratorios de Salud Pública (DLSP). Los laboratorios de cada hospital registraron todas las cepas invasivas aisladas de pacientes internados entre octubre de 1996 y abril de 1997, y las refirieron al DLSP conjuntamente con datos básicos del paciente y de la bacteria. En el DLSP se confirmó o completó la identificación y la susceptibilidad de los agentes. Se estudiaron 299 cepas invasivas, pertenecientes a 29 géneros/especies diferentes, de las cuales 54 por ciento provenían de infeccions intrahospitalarias. Los bacilos Gram negativos predominaron: E. coli (29); Acinetobacter sp. (25), K. pneumoniae (21), E. cloacae (11), S. marcescens (11), P aeruginosa (10) y K.oxytoca (6). Prácticamente todos los patrones de resistencia descritos en la literatura para estas especies, fueron registrados en esos aislamientos. El monitoreo efectuado demostró la factibilidad de coordinar acciones de vigilancia de la resistencia a antibióticos, así como la conveniencia de lograr conjuntos de datos referidos al tema. Permitió confirmar la disminución de la susceptibilidad de N. meningitidis a la penicilina (50 por ciento), y ratificar la preeminencia intrahospitalaria de las bacterias Gram positivas. S aureus fue frecuente (n=67), con 27 por ciento de cepas resistentes a la meticilina y la mayoría de éstas sólo sensibles a vancomicina. S. pneumoniae (n=50) fue el patógeno comunitario dominante, con 26 por ciento de resistencia a la penicilina, especialmente en cepas de ni os. No se detectaron Enterococcus ni S. aureus resistentes a vancomicina. El riesgo de la aparición de esa resistencia, sumado a la progresión de la resistencia de diferentes agentes a diversos fármacos, constituye un elemento decisivo para implementar y mantener un sistema nacional de monitoreo que permita registrar tendencias de los patrones de sensibilidad y que alerte precozmente respecto a cambios drásticos en el espectro de susceptibilidad en diferentes especies bacterianas (AU).

Palacio R. et al. *Frequency, type and associated diseases of bacteria and virus in the oropharynx of children born to human immunodeficiency virus-infected mothers.* Braz. j. infect. dis. 1998; 2(3) : 128-34.p Abstract: HIV-infected children are more likely than other children to develop pneumonia, which in these children is often recurrent or persistent. The main reservoir of the major pathogens is the nasopharynx, but to date no data has been published on the frequency and biologic characteristics of S.pneumoniae, H.influenzae and respiratory viruses found in the upper respiratory tract of children born to human immunodeficiency virus-infected mothers. To document these aspects, 105 children who attended an outpatient clinic for HIV-infection evaluation were monitored by pharyngeal swab (PS) and nasopharyngeal aspirates (NPA). Bacterial identification was performed by standard procedures. Serotype, biotype and á-lactamase production was investigated in H.influenzae isolates. S.pneumoniae serotypes were recognized by "quellung" and the susceptibility to 4 antibiotics was assesed. Respiratory syncytial viruses, parainfluenza, influenza A and B, and adenovuruses were diagnosed by indirect immunofluorescence and/or viral isolation in cell cultures. Twenty-nine children were identified as infected by HIV as a result of maternal-child-transmission. Seventy children born to HIV -positive mothers but who were not HIV -infected served as controls. Of 269 PS, 110 S.pneumoniae and 92 H.influenzae were identified. Also 31 viruses were detected in 188 NPA. After stratifying by age, no differences were observed in the frequency of bacterial colonization or in the presence of viruses in the upper respiratory tract of the two groups. Some biologic characteristics of the agents were noteworthy such as the frequency of colonization by S.pneumoniae serotype 14, the predominance of H.influenzae biotype I and the high frequency of viruses in NPA of asymptomatic children. Of note, although colonization frequencies were similar, children presenting with acute respiratory illness (ARI) were more likely to have bacteria isolated if they also had HIV -infection than if they were HIV -negative. It is concluded that HIV -infection in infants as a result of maternal virus transmission have a similar frequency of bacteria and virus colonization of their respiratory tract, but a higher frequencia of ARI and perhaps a higher frequencia of types of bacteria with special characteristics. (AU);.

Palavecino Rosales E. *Puesta al día en aspectos microbiológicos de enterococos.* Rev. chil. infectología. 1999; 16(1) : 55-8.p Abstract: Clinical microbiology laboratories are faced with the challenge of accurate detection of emerging antibiotic resistance among several important gram positive bacterial pahtogens. For enterococci, vancomycin and ampicillin resistance was significantly more prevalent among E. faecium than among E. faecalis. This finding undescores the importance of identifying enterococcal isolates to species for the sake of more precise surveillance. Enterococci are identified to the genus level with tests like pyrrolidine amilaridase, bile esculin and salt tolerance, but in some instances, species identification is desirable. Initial characterization of the species, as well as the antimicrobial susceptibility testing in enterococci, will be discussed in this report (AU).

Pallasch T.J. *Clostridium difficile-associated diarrhea and colitis.* J Calif Dent Assoc. 1999; 27(5) : 405-9, 411-3.p Abstract: Clostridium difficile-induced diarrhea (CDAD) and colitis (CDAC) are important nosocomial (hospital)-acquired infections resulting almost exclusively from antibiotic therapy and certain host factors. The severity of these disorders may range from simple diarrhea that can be resolved easily with antibiotic cessation to fulminant pseudomembranous colitis with fever, severe dehydration, abdominal pain and distention, and plaque formation over part or all of the colon. Community-acquired CDAD and CDAC are far less problematic but nevertheless may affect 20,000 or more people in the United States every year. Knowledge of the risk factors for CDAD and CDAC, including certain antibiotics, and recognition of the entire spectrum of signs and symptoms of this disorder are imperative for good dental practice. Likewise the prevention of recurrence of CDAD by judicious use of antibiotics in its immediate posttreatment period is an important consideration.

Palmer S.M. et al. *Vancomycin-resistant enterococci*. Pharmacotherapy. 1996; 16(5) : 819-29.p Abstract: Vancomycin-resistant enterococci (VRE) are a major problem in numerous institutions in the United States. Most VRE are resistant to all available antimicrobial agents, resulting in serious therapeutic dilemmas. The resistance genes are transmitted on transposons, so the potential for dissemination to other species is significant. Risk factors associated with VRE infection and colonization are vancomycin and cephalosporin use, but numerous patient-related factors also contribute. Although resistant strains appear to arise from the patient's endogenous flora, VRE may be spread through direct contact with contaminated environmental surfaces and hands of caregivers. Published guidelines for preventing such spread suggest implementing infection-control practices and vancomycin restrictions. The ideal drug regimen for the treatment of VRE is unknown. Various drug combinations have been studied in the laboratory, but patient treatment data are scarce. There is an urgent need for new antimicrobial agents.

Palomino M.A. et al. *Hospital-acquired adenovirus 7h infantile respiratory infection in Chile.* Pediatr Infect Dis J. 2000; 19(6) : 527-31.p Abstract: BACKGROUND: Adenoviruses are the second most common cause of viral acute lower respiratory tract infection (ALRI) requiring hospitalization in Chile. Little information is available with respect to nosocomial infection rate by adenovirus. This issue is important because of its potential severity and long term sequelae. METHODS: Infants hospitalized for ALRI were studied to determine the rate of nosocomial cross-infection with respiratory adenovirus and its corresponding genome type. The group studied included all cases younger than 2 years of age admitted to a seven crib ward

in the Roberto del Rio Children's Hospital (Santiago, Chile) between May, 1995, and October, 1996. Nasopharyngeal aspirates for immunofluorescence assay and viral isolation were obtained on admission and the next day. On identification of a positive case for adenovirus, samples were obtained from contacts for 2 consecutive days and twice weekly thereafter for 2 weeks. RESULTS: Fifteen index positive cases for adenovirus and their 65 contacts were identified. Secondary attack rate for adenoviral cross-infection was 55%, most of which were diagnosed by viral isolation. Mortality occurred in 4 cases; 3 had underlying diseases. Four secondary cases presented mild respiratory infection after acquiring the cross-infection, and 16 patients developed a moderate and severe ALRI. Twelve patients required supplemental oxygen and 4 needed mechanical respiratory support. Genome types for the 10 index cases and 19 contacts were obtained. All of these corresponded to adenovirus 7h. CONCLUSIONS: The high secondary attack rate observed, stresses the importance of adequate isolation of patients and the need for rapid and sensitive viral diagnosis.

Papapetropoulou M. et al. *Environmental mycobacteria in bottled table waters in Greece.* Can J Microbiol. 1997; 43(5) : 499-502.p Abstract: A hundred and fifty samples of bottled table water sold by Greek factories were examined for the presence of environmental mycobacteria. Environmental mycobacteria were found in 23 (15.6%) of the 150 tested samples. Bacterial numbers of 1-100, 101-300, 301-1000, and > 10(3) CFU/L were found in 8, 2, 1, and 4% of the samples, respectively. The identification of the environmental mycobacteria was performed by both polymerase chain reaction-restriction enzyme analysis (PCR-REA) and biochemical methods. The environmental mycobacteria found were 14 Mycobacterium chelonae, 3 Mycobacterium phlei, 4 Mycobacterium gordonae, and 2 Mycobacterium flavescens. The relatively high number of environmental mycobacteria in bottled table water leads us to believe that the search of these opportunistic microorganisms in bottled water could be a useful index of their hygienic quality when this water is to be consumed by immunologically compromised patients. No statistically significant correlation was found between the presence of mycobacteria and the bacteriological faecal indicators ($P < 0.005$).

Papoff P. et al. *[Characteristics of airway colonization in mechanically ventilated newborn infants].* Pediatr Med Chir. 1997; 19(6) : 413-6.p Abstract: This study was designed to define the pattern of airway colonization in mechanically ventilated neonates and to assess whether this is associated with clinical signs of infection and/or local or systemic inflammation. One hundred and fifty-seven bronchoalveolar lavages (BAL) were obtained from 40 intubated neonates for microbiologic and cytologic evaluation of the distal airway. Concomitantly with each BAL, clinical data and laboratory tests were recorded. Ninety-seven BAL were negative, whilst 56 (37%) yielded the growth of gram-positive bacteria (84%), gram-negative bacteria (6%), fungi (5%), or P. carinii (5%). Airway colonization occurred in 9 (22%) neonates within the first 72 hours of life and in 31 (78%) during the following days. S. aureus was the most commonly isolated organism (70%). Clinical signs of pulmonary infection were present in all cases of vertical colonization and in 35 (66%) of nosocomial transmission. Blood and BAL white cell counts were higher coincidentally with airway colonization ($p = 0.13$ and $p = 0.57$, respectively). Antibiotic treatment was changed on the basis of BAL culture results. Follow-up cultures of the BAL were obtained in 13 neonates in whom antibiotics were changed. Negative cultures were found in 8 of these neonates, and 50% of these cases showed clinical improvement. Further work is needed to assess the cost-benefit ratio of prophylactic antibiotic administration in intubated neonates and the possible advantage(s) of treating microorganisms colonizing the airway of these subjects.

Paradisi F. et al. *Is Streptococcus pneumoniae a nosocomially acquired pathogen?* Infect Control Hosp Epidemiol. 1998; 19(8) : 578-80.p Abstract: Streptococcus pneumoniae is most prominently a major cause of community-acquired infections of the respiratory tract, central nervous system, and bloodstream, but there is an increasing interest in its role in the epidemiology of hospital-acquired infections. Penicillin-resistant pneumococcal strains appeared 3 decades ago and now are present worldwide, often displaying multiple resistance due to antibiotic selective pressure. Horizontal spread can cause either sporadic cases or hospital outbreaks, primarily in younger children and elderly patients. Pneumococcal transmission from one patient to another can be documented by polymerase chain reaction or pulsed-field gel electrophoresis typing. Nosocomial acquisition of infection, along with pediatric age, previous hospitalization, and previous beta-lactam therapy, are the main risk factors significantly associated with penicillin-resistant pneumococcal infections. Nosocomial acquisition also is associated with higher mortality from pneumococcal disease. The importance of penicillin resistance as a risk factor significantly associated with higher mortality from pneumococcal infection is found in some studies, but not in others. Mortality from pneumococcal pneumonia is approximately the same for human immunodeficiency virus (HIV)-infected patients without acquired immunodeficiency syndrome (AIDS) as for HIV-negative subjects, but it is significantly higher in AIDS patients. Penicillin-resistant strains are involved in the vast majority of hospital outbreaks, whether presenting as clinically manifest infection or a simple colonization. Pneumococcal vaccination is recommended universally in order to lower the incidence of invasive infection, although a number of problems can limit its effectiveness.

Paradisi F. et al. *Urosepsis in the critical care unit.* Crit Care Clin. 1998; 14(2) : 165-80.p Abstract: Critical care unit patients show a higher risk of developing a bloodstream infection than ward patients. The urinary tract is the main source of hospital-acquired secondary bloodstream infection. Nosocomial urinary tract infection is promoted by bladder catheterization in the vast majority of cases. Aerobic gram-negative bacilli are the prevalent agents of bloodstream infection secondary to a nosocomial urinary tract infection. Sepsis and septic shock are severe complications of these infections in the critical care patient. Management of patients with a septic process of urinary source calls for the combination of adequate life-supporting care, an appropriate antibiotic therapy, and innovative adjunctive measures. Accurate catheter care is the best measure to adopt for the prevention of urosepsis.

Parasakthi N. *Emerging problems of antibiotic resistance in community medicine.* Malays J Pathol. 1996; 18(1) : 9-13.p Abstract: Emergence of antimicrobial resistance in bacteria associated with community acquired infections has made the choice of empirical therapy more difficult and more expensive. The problems due to possible spread of MRSA to the community, emergence of penicillin resistance in S. pneumoniae, ampicillin resistance in H. influenzae, and multiresistance among common enteric pathogens are highlighted. Bacteria have a remarkable ability to develop resistance to many of the newly synthesized antimicrobial agents but the appropriate use of antibiotics will delay and in many cases prevent the emergence of resistance.

Parenti D.M. et al. *Infectious causes of acute pancreatitis.* Pancreas. 1996; 13(4) : 356-71.p Abstract: A wide variety of infectious agents has been associated with acute pancreatitis. Strict diagnostic criteria were developed to assess with relationship between individual microorganisms and acute pancreatitis. Pathologic or radiologic evidence of pancreatitis associated with well-documented infection was noted with viruses (mumps, coxsackie, hepatitis B, cytomegalovirus, varicella-zoster virus, herpes simplex virus), bacteria (Mycoplasma, Legionella, Leptospira, Salmonella), fungi (Aspergillus), and parasites (Toxoplasma, Cryptosporidium, Ascaris). Clues to the infectious nature of pancreatitis lay in the characteristic signs and symptoms associated with the particular infectious agent. How often these agents are responsible for idiopathic pancreatitis is unclear.

Park H.S. et al. *Migrated Hickman catheters: a simple repositioning method using a stiff hydrophilic guidewire.* Cardiovasc Intervent Radiol. 2000; 23(1) : 70-2.p Abstract: We present a simple guidewire insertion technique and a new way of prepping for the procedure for readvancement of partially retracted Hickman catheters with the aid of a stiff hydrophilic guidewire.

Park Y.K. et al. *Antimicrobial activity of propolis on oral microorganisms.* Curr Microbiol. 1998; 36(1) : 24-8.p Abstract: Formation of dental caries is caused by the colonization and accumulation of oral microorganisms and extracellular polysaccharides that are synthesized from sucrose by glucosyltransferase of Streptococcus mutans. The production of glucosyltransferase from oral microorganisms was attempted, and it was found that Streptococcus mutans produced highest activity of the enzyme. Ethanolic extracts of propolis (EEP) were examined whether EEP inhibit the enzyme activity and growth of the bacteria or not. All EEP from various regions in Brazil inhibited both glucosyltransferase activity and growth of S. mutans, but one of the propolis from Rio Grande do Sul (RS2) demonstrated the highest inhibition of the enzyme activity and growth of the bacteria. It was also found that propolis (RS2) contained the highest concentrations of pinocembrin and galangin.

Parker L. *I.v. devices and related infections: causes and complications.* Br J Nurs. 1999-2000; 8(22) : 1491-2, 1494, 1496-8.p Abstract: The use of intravenous devices has long been established as a life-saving and important part of total patient management. However, such devices are not without risk and their use is frequently complicated by local or systemic infections and complications. Twenty-five million patients are estimated to enter the NHS annually and receive some form of intravenous therapy by the peripheral route (Campbell, 1998). It behoves all staff who are involved in the management of intravenous devices to base their practice on what is agreed by consensus in the literature as being effective in reducing the risk of hospital-acquired infections. This article draws together such literature and presents recommendations for good practice for the management of intravenous-related devices.

Parker L.J. *Importance of handwashing in the prevention of cross-infection.* Br J Nurs. 1999; 8(11) : 716-20.p Abstract: Although the importance of handwashing is routinely acknowledged, a religious application of this practice still does not exist. Discussion in modern medicine on the subject of handwashing always states that it is the single most important factor in preventing hospital-acquired infection. This article continues the series on infection control and practical procedures by looking at the evidence that supports the above statement and discusses various handwashing methods and how to increase compliance to handwashing in the healthcare setting.

Parr A.M. et al. *Antimicrobial activity of lidocaine against bacteria associated with nosocomial wound infection.* Ann Plast Surg. 1999; 43(3) : 239-45.p Abstract: The authors characterized the in vitro antibacterial properties of clinical doses of lidocaine on isolates of a variety of bacterial pathogens commonly encountered in the setting of nosocomial wound infection (Enterococcus faecalis, Escherichia coli, Pseudomonas aeruginosa, and Staphylococcus aureus) as well as a number of resistant strains of methicillin-resistant S. aureus and vancomycin-resistant enterococci. Time-kill studies were carried out on bacteria exposed to various clinical concentrations of lidocaine (0%, 1%, 2%, and 4%) with and without epinephrine (1:100,000). Minimum inhibitory concentrations and minimum bactericidal concentrations were determined for some strains using a broth macrodilution method recommended by the National Committee of Clinical Laboratory Standards. Lidocaine demonstrated a dose-dependent inhibition of growth for all strains of bacteria tested. The greatest sensitivity to lidocaine was shown by gram-negative organisms; the least sensitive was S. aureus. The addition of epinephrine to the local anesthetic had no effect on the susceptibility of the bacteria to lidocaine. These observations suggest that the surgical benefit of local anesthesia may extend beyond its analgesic properties and may have a role in the prophylaxis and, in the case of methicillin- and vancomycin-resistant bacteria, the treatment of surgical wound infection, mandating a wider application of this modality.

Parras F. et al. *Comparative study of mupirocin and oral co-trimoxazole plus topical fusidic acid in eradication of nasal carriage of methicillin-resistant Staphylococcus aureus.* Antimicrob Agents Chemother. 1995; 39(1) : 175-9.p Abstract: Mupirocin is a topically applied drug that is very active in the eradication of nasal carriage of methicillin-resistant Staphylococcus aureus (MRSA). However, studies designed to compare mupirocin treatment with other antimicrobial regimens are lacking. We therefore conducted an open, prospective, randomized, controlled trial to compare the efficacy and safety of mupirocin versus those of oral co-trimoxazole plus topical fusidic acid (both regimens with a clorhexidine scrub bath) for the eradication of MRSA from nasal and extranasal carriers of MRSA. The eradication rates with mupirocin and co-trimoxazole plus fusidic acid at 2, 7, 14, 21, 28, and 90 days were 93 and of 93, 100 and 100, 97 and 94, 100 and 92, 96 and 95, and 78 and 71%, respectively, for nasal carriage. At 7, 14, and 28 days the eradication rates for extranasal carriage by the two regimens were 23 and 74, 83 and 76, and 45 and 69%, respectively. The efficacies and safety of both regimens were similar. The MRSA isolates were not resistant to the study drugs either at the baseline or at follow-up. These results suggest that mupirocin and co-trimoxazole plus fusidic acid, both used in conjunction with a chlorhexidine soap bath, are equally effective and safe for the eradication of MRSA from nasal and extranasal MRSA carriers. Mupirocin was easier to use but was more expensive.

Parrochia Beguin E. *Antibióticos I: betalactámicos: penicilinas o penames.* Bol. Hosp. San Juan de Dios. 1995; 42(4) : 208-10.p Abstract: Entre los 53 años transcurridos desde la introducción de la penicilina al campo de la terapéutica, se ha modificado substancialmente la patología infecciosa; han aparecido cepas microbianas resistentes a algunos antibióticos y se han descubierto nuevos antimicrobianos de espectros más amplios; de efectos más potentes y de mejor tolerancia. Uno de los grupo de antibióticos de mayor utilidad es el de las penicilinas o penames que tienen todas un núcleo 6 aminopenicilánico común y que forman parte de los betalactámicos. En esta revisión se presentan esquemáticamente los espectros de acción, las principales indicaciones clínicas y las dosis habituales de los diversos tipos de penicilinas disponibles (AU).

Parry C.M. et al. *Nasal carriage in Vietnamese children of Streptococcus pneumoniae resistant to multiple antimicrobial agents.* Antimicrob Agents Chemother. 2000; 44(3) : 484-8.p Abstract: Resistance to antimicrobial agents in Streptococcus pneumoniae is increasing rapidly in many Asian countries. There is little recent information concerning resistance levels in Vietnam. A prospective study of pneumococcal carriage in 911 urban and rural Vietnamese children, of whom 44% were nasal carriers, was performed. Carriage was more common in children <5 years old than in those >/=5 years old (192 of 389 [49.4%] versus 212 of 522 [40.6%]; P, 0.01). A total of 136 of 399 isolates (34%) had intermediate susceptibility to penicillin (MIC, 0.1 to 1 mg/liter), and 76 of 399 isolates (19%) showed resistance (MIC, >1.0 mg/liter). A total of 54 of 399 isolates (13%) had intermediate susceptibility to ceftriaxone, and 3 of 399 isolates (1%) were resistant. Penicillin resistance was 21.7 (95% confidence interval, 7.0 to 67.6) times more common in urban than in rural children (35 versus 2%; P, <0.001). More than 40% of isolates from urban children were also resistant to erythromycin, trimethoprim-sulfamethoxazole, chloramphenicol, and tetracycline. Penicillin resistance was independently associated with an urban location when the age of the child was controlled for. Multidrug resistance (resistance to three or more antimicrobial agent groups) was present in 32% of isolates overall but in 39% of isolates with intermediate susceptibility to penicillin and 86% of isolates with penicillin resistance. The predominant serotypes of the S. pneumoniae isolates were 19, 23, 14, 6,

and 18. Almost half of the penicillin-resistant isolates serotyped were serotype 23, and these isolates were often multidrug resistant. This study suggests that resistance to penicillin and other antimicrobial agents is common in carriage isolates of S. pneumoniae from children in Vietnam.

Pasargiklian I. et al. *Ticarcillin/clavulanic acid: determination of minimal inhibitory concentrations against bacterial strains isolated from patients in intensive care units. Comparison with other agents.* J Chemother. 1996; 8(2) : 113-21.p Abstract: A total of 303 bacterial strains isolated from bronchoaspirates of Intensive Care Unit (ICU) patients, collected through June and December 1993, were tested for susceptibility to ticarcillin/clavulanic acid, imipenem, amikacin, ceftazidime, ciprofloxacin and piperacillin. The minimal inhibitory concentration (MIC) for each antibiotic was determined according to the NCCLS, by means of serial dilution on microplates. The isolates, 80.8% of which were beta-lactamase producing strains, belonged to Pseudomonas aeruginosa (79 strains), Pseudomonas fluorescens (8 strains), Xanthomonas maltophila (25 strains), Escherichia coli (16 strains), Klebsiella-Enterobacter-Serratia (KES) (62 strains), Proteus spp. (15 strains), Acinetobacter spp. (22 strains), Moraxella spp. (15 strains), Bacteroides catarrhalis (8 strains), Haemophilus spp. (11 strains), Staphylococcus aureus (32 strains), Enterococcus faecalis (10 strains). The highest rate of susceptibility to ticarcillin/clavulanic acid (100%) was detected among E. faecalis (MIC 2-16 micrograms/ml), B. catarrhalis (MIC 1-4 micrograms/ml) and Haemophilus spp. (MIC 1-4 micrograms/ml). Among the non-fermenting microorganisms ticarcillin/-clavulanic acid showed good activity toward P. aeruginosa and P. fluorescens (86% and 75% respectively). It was also very active against X. maltophilia with a susceptibility of 96%. Susceptibility to the other antibiotics tested was within the range of 16% and 28%.

Passaro D.J. et al. *Postoperative Serratia marcescens wound infections traced to an out-of-hospital source.* J Infect Dis. 1997; 175(4) : 992-5.p Abstract: From 25 August to 28 September 1994, 7 cardiovascular surgery (CVS) patients at a California hospital acquired postoperative Serratia marcescens infections, and 1 died. To identify the outbreak source, a cohort study was done of all 55 adults who underwent CVS at the hospital during the outbreak. Specimens from the hospital environment and from hands of selected staff were cultured. S. marcescens isolates were compared using restriction-endonuclease analysis and pulsed-field gel electrophoresis. Several risk factors for S. marcescens infection were identified, but hospital and hand cultures were negative. In October, a patient exposed to scrub nurse A (who wore artificial fingernails) and to another nurse-but not to other identified risk factors-became infected with the outbreak strain. Subsequent cultures from nurse A's home identified the strain in a jar of exfoliant cream. Removal of the cream ended the outbreak. S. marcescens does not normally colonize human skin, but artificial nails may have facilitated transmission via nurse A's hands.

Patel D. et al. *Methicillin-resistant Staphylococcus aureus and multidrug resistant tuberculosis: Part 1.* Occup Med (Lond). 2000; 50(6) : 392-4.p Abstract: The first of these articles reviews the epidemiology of MRSA and its clinical importance in a healthcare setting. The methods of controlling the spread of hospital acquired MRSA are discussed with an emphasis on the role of screening staff for MRSA. Relevant papers for the review were identified by a systematic literature search on Medline. The prevalence of MRSA is increasing in the United Kingdom, as is the prevalence of 'epidemic' MRSA strains. Several countries have recently reported cases of Staphylococcus aureus with intermediate-level resistance to vancomycin. The key measures to minimizing hospital-acquired MRSA are stringent infection control programmes and strict antibiotic policies. Staff screening should only be undertaken after a detailed risk assessment of the local situation has been made by the occupational health and infection control teams. Priority should be given to high-risk areas of a hospital where MRSA is endemic.

Patel J.A. et al. *Bacteriologic failure of amoxicillin-clavulanate in treatment of acute otitis media caused by nontypeable Haemophilus influenzae.* J Pediatr. 1995; 126(5 Pt 1) : 799-806.p Abstract: OBJECTIVE: To evaluate the rate of bacteriologic failure of amoxicillin-clavulanate in the treatment of acute otitis media (AOM) and to identify the risk factors associated with failure. METHODS: Ninety-nine subjects (mean age, 21.4 months) with AOM were treated with amoxicillin-clavulanate in two prospective study trials that compared efficacy of two experimental antibiotics with amoxicillin-clavulanate. Tympanocentesis for microbiologic studies was performed in all subjects at enrollment; at 3 to 6 days, during amoxicillin-clavulanate therapy; and at other times when clinically indicated. The subjects were followed up for 1 month. Clinical, bacteriologic, and virologic characteristics of the subjects were analyzed. RESULTS: Bacteriologic failure of treatment occurred in none of 39 subjects (0%) with Streptococcus pneumoniae, two of 25 (8%) with Moraxella catarrhalis, and 11 of 29 (38%) with nontypeable Haemophilus influenzae (NTHi) infection. The failure rate for NTHi was higher than that for other pathogens ($p = 0.0007$) and was increased when compared with the preceding study period ($p = 0.017$). Bacteriologic failure was also associated with clinical failure ($p = 0.041$). In subjects with AOM caused by NTHi the rates of adequate drug compliance were comparable in both success and failure groups. Antimicrobial susceptibility testing by minimum inhibitory concentration and minimum bactericidal concentration (MIC/MBC) assays showed that amoxicillin-clavulanate resistance was not significantly associated with bacteriologic failure of treatment. However, in two subjects, MIC/MBC of the NTHi isolates during therapy were higher than MIC/MBC of the isolates before therapy; these strains of isolates pretherapy and during therapy were discordant as determined by outer membrane protein analysis. The bacteriologic failure rate was higher in nonwhite boys ($p = 0.026$) and in subjects with a history of three or more previous episodes of AOM ($p = 0.008$). Other factors such as age, bilaterality of disease, polymicrobial infection, and biotype pattern of NTHi were not associated with treatment failure. When children with adequate drug compliance were analyzed separately, only those with concomitant viral infection of the nasopharynx or middle ear were found to be at an increased risk of bacteriologic failure of treatment ($p = 0.04$). CONCLUSIONS: The bacteriologic failure rate of amoxicillin-clavulanate therapy for AOM caused by NTHi was higher in the current study period than in the preceding period. Factors contributing to treatment failure were race, gender, proneness to otitis, and concomitant viral infection.

Patel J.C. et al. *Infectious complications in critically injured children.* J Pediatr Surg. 2000; 35(8) : 1174-8.p Abstract: PURPOSE: Infection will complicate the care of a significant number of injured adults. Trauma is the leading cause of mortality in the pediatric population, yet little information is available regarding the incidence of infection in this group. This study evaluates infectious complications in the critically injured child. METHODS: All children admitted to the pediatric intensive care unit from an urban level-1 trauma center during an 80-consecutive-month period were studied. Infection was defined by Centers for Disease Control criteria and was identified by a retrospective review of the medical records. Demographic and clinical information, including microbiologic data, were compiled for all study patients. Data were analyzed using Student's ttest or chi2 analysis where appropriate. RESULTS: Five hundred twenty-three children were at risk for infection during the study period. Seventy-eight infections were documented in 53 children (incidence, 10.1%). Nosocomial infections accounted for 78% of these with a majority (85%) being device associated. Common infections in this group included lower respiratory ($n = 35$), primary bloodstream ($n = 10$), and urinary tract ($n = 7$). Trauma-related infections were primarily wound ($n = 9$), intraabdominal ($n = 3$), or central nervous system ($n = 3$). Bacterial pathogens predominated, and the most frequent microorganisms recovered were Staphylococcus aureus, Pseudomonas sp, and Haemophilus sp. Children with infectious

from the transducer head before and after wiping off the gel with a dry cloth. Daily transducer head and gel cultures were negative. Of the abdominal skin cultures, 175 (92%) were positive; 35 (18%) were positive for serious organisms, and 140 (74%) were positive for organisms of low virulence. Sixty percent of the transducer head cultures from women with abdominal skin pathogens were positive before the gel was wiped off. None of the cultures from the transducer head were positive after removal of the gel. We conclude that many women carry potentially virulent pathogens on the abdominal skin and that transmission of these organisms to the transducer head commonly occurs. Physical removal of the gel from the transducer head effectively eradicates these microorganisms, minimizing patient-to-patient transmission.

Paul S.M. et al. *A statewide surveillance system for antimicrobial-resistant bacteria: New Jersey.* Infect Control Hosp Epidemiol. 1995; 16(7) : 385-90.p Abstract: OBJECTIVES: To determine the validity of an active, hospital laboratory isolate-based surveillance system in estimating rates of infection and to evaluate the use of surveillance data in describing institutional risk factors for increased rates of infection. Methicillin-resistant Staphylococcus aureus (MRSA) was chosen as the prototype organism for these evaluations. DESIGN: Correlation Study: linear regression analysis and Student's t test were used to evaluate the correlation between number of MRSA isolates and number of MRSA infections in acute-care hospitals. Cross-Sectional Study: Student's t test, analysis of variance, and multiple linear regression analysis were used to evaluate the association between mean annual rate of MRSA blood isolates and institutional risk factors for increased rates of infection. SETTING: Acute-care hospitals, New Jersey. RESULTS: The number of MRSA blood isolates was significantly correlated with MRSA blood infections (R, 0.78; P <.01) and provided a good proxy measure for number of infections. Multivariate analysis demonstrated hospital location in the inner city (P =.02) and number of occupied beds (P <.01) to be independently associated with increased mean annual rates of MRSA blood isolates in acute-care hospitals. CONCLUSIONS: This surveillance system is a valid tool for the estimation of institutional rates of infection and for the determination of institutional risk factors for increased rates of infection. It is ideal for further population-based investigations of antimicrobial-resistant bacteria.

Pavia A.T. *Advances in antimicrobial therapy.* Semin Pediatr Neurol. 1999; 6(4) : 288-98.p Abstract: Despite several decades of improved therapy and prevention of infectious diseases, infectious pathogens remain major causes of morbidity and mortality in humans worldwide. Among the most complex and daunting problems facing medical science is the evolution of antibiotic resistance among many common and once easily-treated infectious agents. This review summarizes the status of newer antimicrobial agents that have utility against pathogens infecting the central nervous system.

Pavia M. et al. *Prevalence of hospital-acquired infections in Italy.* J Hosp Infect. 2000; 44(2) : 135-9.p Abstract: A one-day prevalence survey was conducted in Calabria (Italy) to estimate the prevalence of hospital-acquired infections (HAI) and the effect of different variables on HAI in 888 patients present in a ward for at least 24 hours and not due for discharge or transfer on the day of the survey. The overall prevalence of HAI was 1.7% and urinary tract and surgical wounds were the most frequent sites (each four patients, 26.7%). In only eight (53.3%) of the fifteen HAI detected, had a microbiological examination been requested and the only two positive culture results involved Pseudomonas aeruginosa (surgical site) and Escherichia coli (urinary tract). Results of multiple logistic regression analysis indicated that HAI differed significantly in prevalence between age groups, ward, and was higher in patients with urinary catheters and in those receiving antibiotics. Copyright 2000 The Hospital Infection Society.

Pavia M. et al. *Vancomycin resistance and antibiotic susceptibility of enterococci in raw meat.* J Food Prot. 2000; 63(7) : 912-5.p Abstract: The purpose of this study was to investigate antimicrobial resistance, in particular to vancomycin, of enterococci in samples (100) of meat (beef, chicken, turkey, lamb, and pork) sold in retail outlets of Catanzaro (Italy). Enterococci were identified to the species level. Antimicrobial susceptibility tests for a large spectrum of antibiotics including glycopeptides were performed by the disk diffusion method. Kappa statistic was used to evaluate associations of resistance to vancomycin with other antimicrobials. Enterococci were isolated from 45% of the samples, mostly from chicken meat (65.4%). Overall, 29% of samples were contaminated by vancomycin-resistant enterococci (VRE), whereas among those positive they represented 64.4% of isolates. Higher prevalence of vancomycin resistance was found in chicken samples (76.5%). The overall resistance to teicoplanin (TRE) was 30%, whereas among those positive, TRE represented 66.7% of isolates. The most frequent isolates were Enterococcus faecium (35.6%) and Enterococcus faecalis (33.3%). Resistance to vancomycin and teicoplanin was observed in 75% and 78.5% of E. faecium, and in 40% and 46.7% of E. faecalis, respectively. Most strains were susceptible to ampicillin (80%), while 88.9% were resistant to methicillin. The most effective antimicrobials were imipenem (73.3% susceptible) and rifampin (80%). The highest prevalence of resistance was for streptomycin (88.9%), tetracycline (84.4%), and erythromycin (75.6%). Resistance to vancomycin was significantly associated to methicillin, teicoplanin, erythromycin, tetracycline, and chloramphenicol. Further investigations about enterococcal colonization and infections in community and hospital subjects are needed.

Pavlova S.I. et al. *In vitro inhibition of commercial douche products against vaginal microflora.* Infect Dis Obstet Gynecol. 2000; 8(2) : 99-104.p Abstract: Recently, vaginal douching has been associated with many health risks in women. The aim of this study was to analyze the effect of commercial douche products against various vaginal microorganisms, including lactobacilli. Seven commercial douches were tested against eight Lactobacillus clinical isolates and three type strains from the American Type Culture Collection. BV-associated bacteria included six strains of five genera: Gardnerella, Mobiluncus, Mycoplasma, Peptostreptococcus, and Ureaplasma. Two isolates of group B Streptococcus, and three species of Candida were also tested. The minimal inhibition concentrations and minimal contact times for these products against vaginal microorganisms were determined in broth cultures. Four antiseptic-containing douche products showed a strong inhibitory effect against all vaginal microorganisms tested with a short contact time (less than 1 min). Three vinegar-containing douche products selectively inhibited vaginal pathogens associated with bacterial vaginosis, group B streptococcal vaginitis, and candidiasis, but not lactobacilli. The antimicrobial effects of the commercial douche products varied among different brands and microbial species tested.

Peacock S.J. et al. *Outcome following staphylococcal peritonitis.* Perit Dial Int. 2000; 20(2) : 215-9.p Abstract: OBJECTIVE: Staphylococcus spp predominate as the causative pathogen of continuous ambulatory peritoneal dialysis (CAPD)-related peritonitis. This study evaluated the difference in morbidity and mortality between peritonitis caused by S. aureus and coagulase-negative staphylococci (CoNS). DESIGN: Prospective observational study. SETTING: A single regional dialysis unit in a teaching hospital. PATIENTS: Thirty-seven patients had S. aureus peritonitis and 65 patients had CoNS peritonitis between July 1990 and November 1995. MAIN OUTCOME MEASURES: Using the first recorded episode of peritonitis, survival analysis was performed for time to (1) death, (2) removal of peritoneal dialysis catheter, and (3) change to hemodialysis. Abdominal complications were recorded for the first and subsequent episodes. RESULTS: No difference in time to death was demonstrated for the two groups (p = 0.79), although two deaths that occurred during therapy for peritonitis were attributable to S. aureus

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complications were more severely injured (injury severity score [ISS] 24 versus 17, P <.001) and had a longer hospital stay (21 days v 6 days, P <.001) compared with children without infection during the same period. Overall mortality rate for the study group was 5.7% and was not significantly different from children without infection. CONCLUSIONS: Infection is a significant source of morbidity in the critically injured child. Nosocomial infections predominate, and a majority of these are device related, emphasizing the need for continued vigilance toward prevention in this high-risk group.

Patel K. et al. *Microbial inhibitory properties and stability of topotecan hydrochloride injection*. Am J Health Syst Pharm. 1998; 55(15) : 1584-7.p Abstract: The viability of five microorganisms in topotecan 1 mg/mL (as the hydrochloride salt) in sterile water and the stability of the drug were studied. Duplicate portions of topotecan 1 mg/mL were inoculated with Escherichia coli. The process was repeated for Pseudomonas aeruginosa, Staphylococcus aureus, Candida albicans, and Aspergillus niger. Samples were removed from each solution initially and after 6, 16, and 24 hours and 3, 7, 14, 21, and 28 days of incubation at 20-25 degrees C. To test stability, vials of reconstituted topotecan hydrochloride injection were stored at each of three temperatures—5, 25, and 30 degrees C—and other vials were used for time zero analysis. For each temperature, vials were removed at 1, 7, and 14 days and the remaining vials at 28 days for analysis by high-performance liquid chromatography and for visual and pH assessment. P. aeruginosa, S. aureus, and E. coli lost viability at 16 hours, 24 hours, and 28 days, respectively. C. albicans and A. niger did not lose viability, but their numbers did not grow. No differences in color or clarity were observed, and pH was constant. In all solutions, the topotecan concentration was > 98% of the initial concentration. Topotecan 1 mg/mL in sterile water stored at 20-25 degrees C for up t 28 days did not support growth of the five microorganisms studied; in solutions stored at 5, 25, or 30 degrees C for up to 28 days, topotecan 1 mg/mL remained stable.

Patel K.B. et al. *Comparative serum bactericidal activities of ceftizoxime and cefotaxime against intermediately penicillin-resistant Streptococcus pneumoniae.* Antimicrob Agents Chemother. 1996; 40(12) : 2805-8.p Abstract: In a randomized crossover study involving 12 healthy volunteers, 1 g of ceftizoxime or cefotaxime was administered intravenously every 12 h for a total of three doses on two separate weekends. The duration of serum bactericidal titers (SBTs) greater than 1:2 and the time serum drug concentrations remained above the MIC (T > MIC) were determined against three clinical isolates of Streptococcus pneumoniae with intermediate resistance to penicillin. The duration of SBTs and T > MIC for both antimicrobial agents exceeded 50% of the dosing interval for all isolates. Ceftizoxime's T > MIC was statistically greater than that of cefotaxime, indicating that its longer half-life in serum (1.7 h) compared with that of cefotaxime (approximately 1 h) compensates for its slightly lower microbiologic activity against the penicillin-resistant pneumococci tested in this study.

Patel R. et al. *In vitro activity of linezolid against vancomycin-resistant enterococci, methicillin-resistant Staphylococcus aureus and penicillin-resistant Streptococcus pneumoniae.* Diagn Microbiol Infect Dis. 1999; 34(2) : 119-22.p Abstract: We report the activity of the new oxazolidinone antimicrobial agent linezolid against 37 clinical isolates of vancomycin-resistant enterococci (including organisms carrying the vanA, vanB, vanC-1, and vanC-2/3 genes), 26 clinical isolates of methicillin-resistant S. aureus and 20 clinical isolates of high-level penicillin-resistant S. pneumoniae. All isolates of vancomycin-resistant enterococci were inhibited by < or = 4 ug/ml of linezolid. All isolates of methicillin-resistant S. aureus were inhibited by < or = 8 ug/ml of linezolid. All isolates of penicillin-resistant S. pneumoniae were inhibited by < or = 2 ug/ml of linezolid. Linezolid inhibits strains of multidrug resistant Gram-positive cocci in vitro at concentrations < or = 8 ug/ml.

Paterson D.L. et al. *Infective endocarditis in solid organ transplant recipients.* Clin Infect Dis. 1998; 26(3) : 689-94.p Abstract: Infective endocarditis, defined as pathologically or clinically definite by the Duke criteria, was observed in 14 transplant recipients at our institutions. In addition, we reviewed 32 previously reported cases in solid organ transplant recipients. The spectrum of organisms causing infective endocarditis was clearly different in transplant recipients than in the general population; 50% of the infections were due to Aspergillus fumigatus or Staphylococcus aureus, but only 4% were due to viridans streptococci. Fungal infections predominated early (accounting for six of 10 cases of endocarditis within 30 days of transplantation), while bacterial infections caused most cases (80%) after this time. In 80% (37) of the 46 cases in transplant recipients, there was no underlying valvular disease. Seventy-four percent (34) of the 46 cases were associated with previous hospital-acquired infection, notably venous access device and wound infections. Three patients with S. aureus endocarditis had had an episode of S. aureus bacteremia > 3 weeks prior to the diagnosis of endocarditis and had received treatment for the initial bacteremia of < 14 days' duration. The overall mortality rate was 57% (26 of 46 patients died), with 58% (15) of the 26 fatal cases not being suspected during life. Endocarditis is an underappreciated sequela of hospital-acquired infection in transplant recipients.

Pathak A. et al. *Amphotericin B use in a community hospital, with special emphasis on side effects.* Clin Infect Dis. 1998; 26(2) : 334-8.p Abstract: The purpose of this study was to analyze the usage of amphotericin B desoxycholate in a small community hospital, with special emphasis on its side effects and need for premedication. We performed a retrospective chart review for patients who received intravenous amphotericin B from January 1993 to May 1996. Temperature elevation, clinical symptoms during infusion, need for premedication, and fluctuations in serum potassium and creatinine values were especially noted. Statistical analysis showed that toxicity indicated by laboratory values (laboratory toxicity) increased with increasing amphotericin B dose, but clinical side-effects decreased with advancing age. Clinical side effects were not associated with total amphotericin B dosage; laboratory toxicity in our study was not more prevalent in elderly patients. The main finding of this study was that most patients tolerate amphotericin B well and only 23% of patients needed premedication. Our fungal cure rate was 83%. New, expensive preparations of amphotericin B should be reserved for the small subset of patients who either are intolerant of amphotericin B desoxycholate or need high doses for systemic fungal infections.

Pathare N.A. et al. *Diabetic foot infections: a study of microorganisms associated with the different Wagner grades.* Indian J Pathol Microbiol. 1998; 41(4) : 437-41.p Abstract: Patients with diabetes foot infections were evaluated over a two year period to assess the bacteriological spectrum in the different Wagner's grades of foot wounds. Most of the diabetic foot wounds were found to be polymicrobic in nature with an average of 3.07 organisms isolated per case studied. Amongst a total of 775 clinical isolates, 71.09% were aerobic; whereas 28.91% were anaerobic pathogens. Gram-positive organisms like Staphylococcus spp. and Streptococcus spp. formed almost 50% of the clinical isolates in the first two grades and were reduced to less one-fourth of the total organisms in the last two grades. These was a significant increase in the gram-negative organisms and anaerobes in the last two grades.

Patterson S.L. et al. *Microbiologic assessment of the transabdominal ultrasound transducer head*. South Med J. 1996; 89(5) : 503-4.p Abstract: The objectives of this study were to determine (1) the rate of bacterial isolation from the abdomen of women having obstetric ultrasonography, (2) the rate of bacterial transmission to the transducer head, and (3) the eradication rate after routine wiping of the transducer head. A total of 191 obstetric patients participated in this study. At the start of each day, the transducer head and the coupling gel were cultured. Aerobic cultures were obtained from each patient's periumbilical and suprapubic areas before the transabdominal scan and

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infection. In addition, 5 patients developed serious abdominal complications related to an episode of S. aureus peritonitis. Patients with S. aureus peritonitis had a shorter time to both peritoneal dialysis catheter removal (p = 0.004) and change to hemodialysis (p = 0.014). The change in mode of dialysis was independent of catheter loss. CONCLUSION: This study highlights the serious nature of S. aureus peritonitis and confirms the need for effective preventive measures against infection by this pathogen.

Pean Y. et al. *Highlights of the French Antimicrobial Resistance Surveillance Project. French Study Group.* Diagn Microbiol Infect Dis. 1996; 25(4) : 191-4.p Abstract: Thirty-three French laboratories took part in a study to determine the frequency of antibiotic resistance to S. pneumoniae, H. influenzae and M. catarrhalis in different regions of the country. A total of 1317 bacterial isolates were studied. The level of resistance to penicillin among isolates of S. pneumoniae was high particularly in children with otitis media or upper respiratory tract infections. In H. influenzae isolates the level of beta-lactamase production was over 30% in all groups of patients and specimen types and in M. catarrhalis the level of beta-lactamase production was in excess of 90%. Multidrug resistance was found often among the macrolides, tetracyclines, and trimethoprim/sulfamethoxazole, and these antimicrobials should not be regarded as therapeutic alternatives to the beta-lactams.

Pearlman M.D. et al. *Frequent resistance of clinical group B streptococci isolates to clindamycin and erythromycin*. Obstet Gynecol. 1998; 92(2) : 258-61.p Abstract: OBJECTIVE: To determine both the frequency of reported penicillin allergy in parturients and the frequency of resistance in vitro of clinical isolates of group B streptococci to clindamycin and erythromycin. METHODS: One hundred clinical isolates of group B streptococci were tested to determine the frequency of resistance to clindamycin, erythromycin, penicillin G, vancomycin, and cefazolin. The frequency of beta-lactam allergy and reported allergic reaction also were recorded for all consecutive laboring women during the 4-month study. RESULTS: The frequency of group B streptococcal resistance to clindamycin was 15% and to erythromycin was 16%. No isolates were resistant to penicillin G, vancomycin, or cefazolin. Twelve percent of the 963 women who delivered during the study reported a penicillin allergy, but only 30% of those could describe their allergic reaction. CONCLUSION: In vitro resistance of group B streptococci to clindamycin and erythromycin occurred frequently in this population. Whereas the importance of this finding in vivo is uncertain, it raises concern about the possibility of inadequate prophylaxis using currently recommended alternatives in penicillin-allergic patients. Artful questioning of women reporting penicillin allergy may lessen the likelihood of using these less desirable agents in the setting of intrapartum antimicrobial prophylaxis.

Pearlman S.A. et al. *Infective endocarditis in the premature neonate.* Clin Pediatr (Phila). 1998; 37(12) : 741-6.p Abstract: We describe a series of 11 high-risk neonates with infective endocarditis (IE) in this retrospective review. Previously IE has rarely been diagnosed in newborns and is usually fatal. The frequency was 4.3 cases per 100 patients. Five patients survived. Microorganisms included gram positives such as S. aureus and coagulase-negative Staphylococcus, gram negatives such as Klebsiella pneumoniae, Enterobacter cloacae, Enterococcus faecalis, Serratia marcescens, and Acinetobacter calcoaceticus. Echocardiographic location of the lesions showed four left sided, five right sided, and two bilateral. We conclude that IE may be more common than previously described. Prompt diagnosis and treatment led to survival in 45% of our patients. Prospective studies are needed to identify patients at risk and to establish the true incidence of IE in high-risk neonates.

Pedreira Berlangieri W. et al. *Azitromicina en el tratamiento de uretritis agudas: primer estudio multicéntrico nacional de eficacia clínico-microbiológica.* Rev. méd. Urug. 1996; 12(1) : 6-13.p Abstract: OBJETIVOS: evaluar la actividad de los antibióticos recomendados contra N. gonorrhoeae; concomitantemente realizar un estudio de eficacia clínico microbiológica y seguridad con azitromicina (monodosis 1 g) en el tratamiento de uretritis aguda no complicada en hombres con diagnóstico etiológico conocido. MATERIAL Y METODO: fueron estudiadas 46 cepas de N. gonorrhoeae aisladas de pacientes sin tratamiento previo durante el período de setiembre de 1994 a julio de 1995. Además se estudiaron 48 pacientes hombres que consultaron en policlínicas del Hospital Policial y Laboratorio Montevideo con uretritis. Se investigaron C. trachomatis; U. urealyticum y N. gonorrhoeae con valoración de su concentración inhibitoria mínima (CIM) para los distintos antibióticos. Los pacientes fueron evaluados clínico-microbiologicamente a los 7, 15, 21 y 28 días del inicio del antibiótico. Resultados: en las 46 cepas, 25 fueron N. gonorroheae de penicilina sensibles (PEN sensibles). Para azitromicina la CIM 90 fue de 0,25 mg/l, para eritromicina la CIM 90 fue de 1 mg/l y para tetracilina la CIM 90 fue de 1,5 mg/l;no se encontró determinante de resistencia para ciprofloxacina, ceftriaxona, cefixime y espectinomicina. De los 48 pacientes, 40 fueron incluidos en el análisis de eficacia. Las etiologías fueron: N. gonorrhoeae en 17 con CIM 90 de 0,38 mg/l para azitromicina; C. trachomatis en 16, N. gonorrhoeae más C. trachomatis en 5 y U. urealyticum en 2. En el primer control se encontró erradicación microbiológica y cura clínica en 40/40 de los pacientes. La azitromicina fue bien tolerada; sólo tres pacientes presentaron efectos colaterales leves. CONCLUSIONES: N. gonorrhoeae presentó CIM baja para azitromicina no existiendo determinantes de resistencias para ésta. La dosis de 1 g, fue bien tolerada, efectiva y práctica para el tratamiento de uretritis gonocóccica y no gonocóccica(AU).

Pegues D.A. et al. *The epidemiology of resistance to ofloxacin and oxacillin among clinical coagulase-negative staphylococcal isolates: analysis of risk factors and strain types.* Clin Infect Dis. 1998; 26(1) : 72-9.p Abstract: Coagulase-negative staphylococci are important nosocomial pathogens that increasingly are resistant to oxacillin and fluoroquinolones. To determine predictors of acquisition of oxacillin and ofloxacin resistance, we prospectively identified 150 patients from whose clinical specimens coagulase-negative staphylococci were isolated that differed in susceptibility to oxacillin and ofloxacin. In multivariate analysis, isolation of ofloxacin-resistant coagulase-negative staphylococci was associated with receipt of aminoglycosides (odds ratio [OR] = 8.45; 95% confidence interval [CI] = 2.10-34.1; P =.001) and fluoroquinolones (OR = 11.50; 95% CI = 4.15-31.6; P <.001) within 30 days; oxacillin resistance was associated with prior receipt of beta-lactam agents (OR = 5.99; 95% CI = 2.91-12.3; P <.001). Among oxacillin-resistant strains, there was heterogeneity of pulsed-field gel electrophoresis (PFGE) types, and no type was common between ofloxacin-resistant and ofloxacin-susceptible strains. Thus ofloxacin resistance may have emerged de novo among diverse oxacillin-resistant strains following the selection pressures of antimicrobial therapy. In contrast, 50% of patients with oxacillin-susceptible/ofloxacin-resistant strains had one of two PFGE types, a finding suggesting that person-to-person transmission resulted in the dissemination of some of these strains.

Pegues D.A. et al. *Emergence and dissemination of a highly vancomycin-resistant vanA strain of Enterococcus faecium at a large teaching hospital.* J Clin Microbiol. 1997; 35(6) : 1565-70.p Abstract: We prospectively identified patients at the Massachusetts General Hospital from whom vancomycin-resistant enterococci (VRE) were isolated from a clinical specimen from 1 January 1991 through 31 December 1995. VRE strains were available from 139 (82%) of the 169 patients with clinical cases. Of these, 39 (28%) were identical or closely related by pulsed-field gel electrophoresis (i.e., VRE type A strain), including 38 (43%) of 89 VRE strains in 1995. By multivariate analysis, acquisition of the VRE type A strain was associated with receipt of clindamycin (odds ratio [OR] = 10.5), 15 or more days of hospitalization before the first isolation of VRE (OR = 2.9), and residence

on one of the general medical floors (OR = 7.8). The VRE type A strain was a vanA strain of Enterococcus faecium and was highly resistant to all antimicrobial agents tested except chloramphenicol. These findings document the rapid dissemination of a highly resistant strain of E. faecium among patients and among other extant VRE strains at the Massachusetts General Hospital in 1995.

Peinemann F. et al. *Clinical course and treatment of haemorrhagic cystitis associated with BK type of human polyomavirus in nine paediatric recipients of allogeneic bone marrow transplants.* Eur J Pediatr. 2000; 159(3) : 182-8.p Abstract: Of a total of 117 bone marrow transplant (BMT) recipients in the period from August 1988 to November 1995, 9 (7.7%) developed haemorrhagic cystitis. This condition was characterized in all nine patients by late onset (day +24 to +50 post-BMT), long duration (1 to 7 weeks), and the excretion of BK virus in the urine, as confirmed by electron microscopy, DNA hybridization and PCR analysis. Adenovirus was not involved. The serological assessment of BK virus-specific IgM and IgG pre- and post-BMT is consistent with viral reactivation in all patients, although a primary infection cannot be absolutely excluded in a single patient. A significant correlation between the use of high-dose busulphan (16 mg/kg) in the preparative regimen and development of haemorrhagic cystitis (P = 0. 0003) was evident. The severe course of the disease in two patients resulted in bladder tamponade; bleeding could not be inhibited with coagulation and laser treatment. Deterioration was prevented by bladder irrigation via a suprapubic catheter. Remission occurred spontaneously in all patients. CONCLUSION: BK virus induced haemorrhagic cystitis in a paediatric bone marrow transplantation recipients is characterized by late onset, long duration, viral reactivation and correlates to high-dose busulphan. Severe bleeding could not be influenced by surgical intervention.

Peitz U. et al. *The European meeting on Helicobacter pylori: therapeutic news from Lisbon.* Gut. 1998; 43 Suppl 1 : S66-9.p Abstract: The current standard of Helicobacter pylori treatment has been confirmed by the studies presented at the Lisbon workshop—that is, one of three one week proton pump inhibitor (PPI) based triple therapies comprising a twice daily standard dose of a PPI in combination with two of the following antimicrobial agents: clarithromycin, amoxycillin, or a nitromidazole. This standard of treatment is also highly efficacious and cost-effective in routine community practice. The current data confirm the equivalence of ranitidine bismuth citrate to PPI, and of azithromycin to clarithromycin. The optimum dose for azithromycin has not yet been defined. There is some evidence that in certain regions treatment for more than one week may be advantageous. The reasons are still not clear. However, microbial resistance may be one important factor, as it has a substantial effect on treatment outcome and the prevalence of resistance varies considerably in different areas. The negative impact of resistance is increased by shortening the treatment time. At present, there is no general necessity to test for resistance before treatment. However, before selection of a second line treatment, testing for resistance is recommended.

Peixoto Júnior A.A. et al. *Susceptibility of clinical isolates of Bacteroides fragilis group strains to cefoxitin, cefoperazone and ticarcillin/clavulanate.* Rev. Inst. Med. Trop. São Paulo. 2000; 42(3) : 137-9.p Abstract: A total of 40 strains of the B. fragilis group was isolated from clinical specimens in two hospital centers in Fortaleza from 1993 to 1997. The most frequently isolated species was Bacteroides fragilis (19 strains) and most isolates came from intra-abdominal and wound infections. The susceptibility profile was traced for cefoxitin, cefoperazone and ticarcillin-clavulanate by using the agar dilution reference method. All isolates were susceptible to ticarcillin-clavulanate (128/2mug/ml). Resistance rates of 15 and 70 percent were detected to cefoxitin (64mug/ml) and cefoperazone (64mug/ml), respectively. Such regional results permit a better orientation in choosing this group of antibiotics for prophylaxis and therapy especially in relation to cefoxitin, which is frequently used in the hospital centers studied. (AU).

Pelletier S.J. et al. *Bacteremia associated with central venous catheter infection is not an independent predictor of outcomes.* J Am Coll Surg. 2000; 190(6) : 671-80; discussion 680-1.p Abstract: BACKGROUND: Infection is the leading complication of central venous catheters. In the setting of suspected line infection, the CDC recognizes only catheter-related bloodstream infection but not catheter infection without bacteremia, which is designated "colonization." To evaluate the hypothesis that catheter-related bloodstream infection has worse outcomes than catheter infection without bacteremia, we compared demographics, clinical data, and outcomes. STUDY DESIGN: Analysis of catheter infections was performed on data collected prospectively for all episodes of infection occurring from December 1996 to September 1999 on the surgical services at a university hospital. Catheter tips were cultured only when infection was suspected. Catheter infection without bacteremia was defined as systemic evidence of infection, the presence of at least 15 colony-forming units on the catheter tip by a semiquantitative technique, and absence of bloodstream infection with the same organism as the catheter. Catheter-related bloodstream infection required the presence of bacteremia with the same organism as the catheter tip. RESULTS: The 59 patients with catheter-related bloodstream infection had more coexistent infections than the 91 patients with catheter infection without bacteremia (2.9+/-0.1 versus 1.7+/-0.1; p=0.0001), most commonly pneumonia (37.3% versus 16.5%, p = 0.004) and urinary tract infections (28.8% versus 8.8%, p = 0.001). Catheter-related bloodstream infection was associated with an increased proportion of gram-negative organisms compared with catheter infections without bacteremia (29.5% versus 16.9%, p = 0.04) and a trend toward fewer gram-positive organisms (61.5% versus 73.7%, p = 0.07). There were no differences in APACHE II score, WBC, length of hospital stay, time from admission to fever, time from fever to treatment, normalization of WBC, days of antibiotics, defervescence, gender, presence of comorbidities, occurrence of colonization while in an ICU, or mortality rate (18.6% with bacteremia, 24.2% without; p = 0.42). CONCLUSIONS: The presence of bloodstream infection in addition to catheter infection does not appear to alter outcomes. The definition of catheter infection perhaps should be extended to include catheter infections without bloodstream infection in the presence of systemic illness without another source.

Pelton S.I. *Defining resistance: breakpoints and beyond implications for pediatric respiratory infection.* Diagn Microbiol Infect Dis. 1996; 25(4) : 195-9.p Abstract: The emergence of isolates of Streptococcus pneumoniae with reduced susceptibility to penicillins, cephalosporins, trimethoprim-sulfamethoxazole, and macrolide antibiotics requires a re-evaluation of strategies for the treatment of community-acquired respiratory disease. One response has been the consideration of withholding initial antimicrobial therapy for children with acute otitis media (AOM). Review of clinical studies supports a reduction in suppurative complications, and a more rapid resolution of signs and symptoms as well as the course of middle ear disease in children treated with antimicrobial agents. Breakpoints established by the NCCLS for in vitro susceptibility reporting may not reflect clinical efficacy at all sites of disease. Clinical studies of AOM due to penicillin-resistant S. pneumoniae report success with both cefuroxime and amoxicillin-clavulanic acid, however, microbiologic studies suggest an increase in persistent infection in children with disease due to isolates with reduced susceptibility. Successful therapy for AOM due to highly resistant isolates (MIC > or = 2.0 micrograms/ml for penicillin) has been reported with clindamycin, ceftriaxone, and high-dose amoxicillin. The current risk of AOM due to a resistant S. pneumoniae remains low in most U.S. communities. Amoxicillin remains appropriate for most children, ongoing surveillance for resistance and close monitoring of response to therapy is necessary.

Pelton S.I. et al. *Efficacy of linezolid in experimental otitis media.* Antimicrob Agents Chemother. 2000; 44(3) : 654-7.p Abstract: Therapy for otitis media (OM) due to resistant Streptococcus pneumoniae (MIC

of penicillin, >/=2.0 microgram/ml) is challenging. Linezolid, an oxazolidinone, represent a new class of antimicrobial agents with excellent in vitro activity against penicillin-resistant S. pneumoniae; however, in vitro activity against nontypeable Haemophilus influenzae (NTHI) is limited. We evaluated its efficacy against experimental acute OM due to a multidrug-resistant S. pneumoniae isolate and two isolates of NTHI. The chinchilla model was utilized to evaluate the efficacy of linezolid against experimental infection due to S. pneumoniae or NTHI. Serum and middle ear antibiotic concentrations were determined, and sterilization of experimental OM was evaluated. Chinchillas were inoculated directly with S. pneumoniae into the superior bulla. Twenty-four hours after inoculation, all animals had positive middle ear and nasopharyngeal cultures. Animals were given linezolid at 25 mg/kg/dose twice a day (b.i.d.) by orogastric feeding tube or amoxicillin at 40 mg/kg/dose b.i.d. intramuscularly for 5 days. By day 5, all animals in the linezolid group had sterile middle ear cultures and eradication of S. pneumoniae from the nasopharynx. In the amoxicillin group, all nine animals remained middle ear and nasopharynx positive ($P < 0.01$). In animals inoculated with NTHI, 25 and 37.5 mg/kg b.i.d. failed to sterilize middle ear infection or eradicate colonization. Mean levels in middle ear fluid measured during experimental infection were 12.8 microgram/ml at 2 to 6 h and 4. 1 mirogram/ml at 16 to 17 h after orogastric dosing at 25 mg/kg. Linezolid achieved a high concentration in the middle ear during experimental OM. Linezolid eradicated multidrug-resistant S. pneumoniae from the middle ear and nasopharynx. Experimental infection and nasopharyngeal colonization due to NTHI persisted despite achievement of concentrations in the middle ear that were above the MIC (for NTHI).

Peltroche-Llacsahuanga H. et al. *Investigation of infectious organisms causing pericoronitis of the mandibular third molar.* J Oral Maxillofac Surg. 2000; 58(6) : 611-6.p Abstract: PURPOSE: The purpose of the study was to identify the most frequently encountered pyogenic organisms involved in pericoronitis to permit more targeted antibiotic therapy. PATIENTS AND METHODS: Pericoronal pockets of mandibular third molars from 37 patients showing symptoms of acute, severe pericoronitis were sampled and subjected to microbiologic analysis, including primary evaluation by phase-contrast microscopy. To avoid overgrowth with faster-growing, less fastidious organisms, specimens were cultured on a wide variety of selective media (supporting growth of fastidious bacteria, protozoa, and fungi). RESULTS: Microscopic examination indicated spirochetes in 55% and fusiform bacteria in 84% of the samples. A total of 441 microorganisms were isolated and identified from the 37 cultured samples. Besides obligate anaerobic bacteria, including various Actinomyces and Prevotella species, a predominantly facultative anaerobic microflora was cultivated, that is, Streptococcus milleri group (78% of samples), Stomatococcus mucilaginosus (71%), and Rothia dentocariosa (57%). CONCLUSION: It was concluded that the Streptococci milleri group bacteria, well-known for their ability to cause suppurative infections, are most likely involved in the pathogenesis of acute severe pericoronitis of the lower third molar.

Penteado M.S. *[Ways of prevention and control of urinary hospital infections in the hospitals of the city of Saint Paul].* Rev Esc Enferm USP. 1997; 31(1) : 1-22.p Abstract: Theorectical knowledge and practical ability of nurses and nursing auxiliaries regarding methods of prevention and control of hospital acquired urinary tract acquired infection are studied in 29 hospitals of Sao Paulo. For this it was filled a form with questions constructed with questions for the correct form of prevention and control of urinary tract acquired infection, particularly those that were published for the CDC guidelines of the prevention and control of the Center of Disease Control (CDC). We also studied the possible effects of the infection control Department on the Theoretical Knowledge and practical ability of nurses and nursing auxiliaries regarding infection control measures.

Penzak S.R. et al. *Stenotrophomonas (Xanthomonas) maltophilia: a multidrug-resistant nosocomial pathogen.* Pharmacotherapy. 1997; 17(2) : 293-301.p Abstract: Stenotrophomonas (Xanthomonas) maltophilia is emerging as a multidrug-resistant nosocomial pathogen. In general, the organism is opportunistic, colonizing or infecting patients with predisposing risk factors such intensive care unit residence, malignancy, mechanical ventilation, and previous antibiotic exposure. It can cause a variety of infections depending on underlying patient-specific medical conditions. It is often part of multimicrobial infections, and determining its role as a pathogen is difficult. Trimethoprim-sulfamethoxazole (TMP-SMX) has traditionally been the most active agent against S. maltophilia. Other classes of antibiotics, with few exceptions, have not been effective. Synergistic antimicrobial combinations are now being investigated due to the bacteriostatic nature of TMP-SMX, and increasing reports of resistance to TMP-SMX. The combination of ticarcillin-clavulanate plus TMP-SMX appears to be the most promising regimen studied thus far.

Percival R.S. et al. *Age-related changes in salivary antibodies to commensal oral and gut biota.* Oral Microbiol Immunol. 1997; 12(1) : 57-63.p Abstract: The prevalence of mucosally derived infections appears to increase with age, suggesting dysfunction at the mucosal surfaces. The present investigation was undertaken to examine any age-related changes in secretion rates and concentrations of secretory antibodies in whole and parotid saliva in a healthy adult population. A total of 116 subjects were subdivided into the following age groups: 20-39 years, 40-59 years, 60-79 years and 80 years and over. Specific immunoglobulin A (IgA), IgG and IgM antibodies in whole and parotid saliva to Streptococcus mutans (serotype c), Actinomyces viscosus NCTC 10951, and Escherichia coli NCTC 10418 were quantified by enzyme-linked immunosorbent assay. IgA antibodies to all three organisms examined increased with age in both whole and parotid saliva, whereas IgG antibody levels to S. mutans in whole saliva were significantly decreased with age. IgG antibodies to E. coli in parotid saliva were reduced in older age groups. IgM antibody levels to S. mutans were reduced with age in both secretions, whereas IgM antibodies to A. viscosus were greatest in the oldest age groups. No significant changes with age were observed in salivary IgM antibody levels to E. coli. No significant reduction in the secretion rates of IgA antibodies were observed in parotid or whole saliva, whereas IgG and IgM antibody secretion rates to all three microorganisms were reduced in most age groups in both whole and parotid saliva. The results of this investigation have demonstrated age-related changes with salivary antibodies, but, whereas salivary IgG and IgM antibodies showed decreases, salivary IgA levels generally increased with age. This suggests that the ability to form IgA antibody responses is not impaired with increased age, and that secretion rates and functional properties of antibodies may be as important as concentrations in protection against mucosal infective diseases.

Pereira M. et al. *PER-1 extended-spectrum beta-lactamase production in an Alcaligenes faecalis clinical isolate resistant to expanded-spectrum cephalosporins and monobactams from a hospital in Northern Italy.* Microb Drug Resist. 2000; 6(1) : 85-90.p Abstract: An Alicaligenes faecalis (FL-424/98) resistant to expanded-spectrum cephalosporins and aztreonam was isolated from the urine of an inpatient at the Intensive Care Unit of the Varese Hospital (Northern Italy) after antimicrobial chemotherapy with cefazolin, vancomycin, and amikacin. Clavulanic acid restored the activity of expanded-spectrum cephalosporins, suggesting the production of an extended-spectrum beta-lactamase (ESbetaL). A crude extract of FL-424/98 showed the presence of two beta-lactamase activities focusing at pH 5.3 and 7.6, respectively. The ESbetaL activity, purified by means of three chromatographic steps, was found to correspond to the pI 5.3 enzyme. Determination of kinetic parameters confirmed that the enzyme efficiently hydrolyzed expanded-spectrum cephalosporins and aztreonam. A colony-blot hybridization revealed the presence of blaPER-related sequences in FL-424/98, and sequencing confirmed the identity of this determinant with blaPER-1, previously detected in Pseudomonas aeruginosa, Acinetobacter, and

Salmonella clinical isolates from Turkey. Finding of blaPER-1 in a species that can be part of the resident human microbiota raises the possibility that it could be an efficient shuttle for spreading of this resistance gene among other opportunistic pathogens that are normally members of the resident microbiota. Kinetic parameters determined for the PER-1 enzyme with some cephalosporin substrates were somewhat different from those previously reported.

Pérez C. C. et al. *Imipenem - cilastatina versus ceftazidima - amikacina para el tratamiento de pacientes neutropénicos febriles.* Rev. méd. Chile. 1995; 123(3) : 312-20.p Abstract: Aim: To compare the efficacy of imipenem - cilastatine and ceftazidime - amikacin in the treatment of febril neutropenic patients. Design: Open prospective and randomized clinical study. Patients: 52 patients (26 females) aged 16 toõ0 years old with 60 episodes of neutropenia were studied. They were randomly assigned to receive Imipenem - cilastatine in doses of 500 mg iv qid or the combination of ceftazidime 1 to 1.5 g iv tid and amikacin 7.5 mg/kg iv bid. Results: Global response to initial therapy was 53 percent in patients receiving imipenem - cilastatine and 37 percent in those receiving ceftazidime - amikacin (p=ns). When other antimicrobial were added, a 90 andõ5 percent infection eradication success was achieved respectively. Six febrile episodes in the group receiving imipenem - cilastatine and 12 episodes in tha group receiving ceftazidime - amikacin had Gram positive cocci as the sole treatment outcome. Three patients receiving imipenem - cilastatine (10 percent) and 4 receiving ceftazidime - amikacin (13 percent) died. Superinfections and toxicity related to antibiotics were minimal in both groups. Conclusions: imipenem - cilastatine and the combination of ceftazidime with amikacin were equally effective in the treatment of febril episodes in neutropenic patients (AU).

Perez F.J. et al. *Meropenem permeation through the outer membrane of Pseudomonas aeruginosa can involve pathways other than the OprD porin channel.* Chemotherapy. 1996; 42(3) : 210-14.p Abstract: The outer membrane protein (OMP) OprD is the major channel through which carbapenems permeate the outer membrane of Pseudomonas aeruginosa. In this study, we analyzed the OMP profiles of several P. aeruginosa clinical isolates showing diminished susceptibility to imipenem while remaining susceptible to meropenem. All these isolates lacked OprD or showed a reduced expression of this porin. Susceptibility to meropenem was thus independent of the level of OprD expression, indicating that the antimicrobial could be taken up via an alternative route. The level of expression of OprC (70 kD) was also unrelated to meropenem susceptibility. Nevertheless, OMPs OprF and OprE were expressed by all isolates, suggesting that in the absence of OprD, these porins might be involved in the permeation of meropenem.

Perez Fernandez P. et al. *Enhancement of the susceptibility of Staphylococcus aureus to phagocytosis after treatment with fosfomycin compared with other antimicrobial agents.* Chemotherapy. 1995; 41(1) : 45-9.p Abstract: Phagocytosis and intracellular killing of invading pathogens by host cells play the major role in resistance to bacterial infections. In vitro, antibiotics improve the susceptibility of microorganisms to antimicrobial activity of leukocytes, suggesting that this effect may contribute to determine the antimicrobial therapy and safe dosing intervals. The susceptibility of Staphylococcus aureus to phagocytosis and killing by human polymorphonuclear leukocytes (PMNL) in the presence of normal human serum in the postantibiotic phase of fosfomycin were compared with ciprofloxacin, cefotaxime and pristinamycin. Pretreatment of S. aureus for 10 min with 4 x MIC of fosfomycin and ciprofloxacin clearly sensitized the bacteria to leukocytic killing in the presence of normal human serum (10% v/v); cefotaxime and pristnamycin failed to enhance the phagocytic killing.

Perini S. et al. *Tesio catheter: radiologically guided placement, mechanical performance, and adequacy of delivered dialysis.* Radiology. 2000; 215(1) : 129-37.p Abstract: PURPOSE: Tunneled catheters are an alternative means of vascular access for patients in need of hemodialysis who cannot undergo dialysis through a surgical shunt. This study was undertaken to evaluate the performance of the Tesio dialysis catheter. MATERIALS AND METHODS: A prospective study of the Tesio catheter was performed. Follow-up data regarding catheter function and adequacy of dialysis were obtained from nine hemodialysis facilities. RESULTS: Seventy-nine Tesio catheters were placed in 71 patients. Immediate technical success was 99% (78 of 79 catheters). The procedure complication rate was 9% (seven catheters). Only two complications required intervention: one fatal air embolism and one chest wall hematoma. Sixty-seven catheters in 60 patients were followed up for a total of 4,367 catheter days. Overall, catheter-related infection occurred in 9% (six of 67 catheters). Primary catheter patency was 87% at 1 week, 82% at 1 month, 72% at 3 months, and 66% at 6 months. Mean blood flow was 286 mL/min immediately after insertion, 301 mL/min at 3 months, and 306 mL/min at 6 months. Adequate dialysis dose as reflected by a urea reduction ratio of 60 or more or a urea kinetic modeling, or Kt/V, value of 1.2 or more was observed on at least one occasion for 74% and 76% of catheters, respectively. CONCLUSION: The Tesio catheter is a reasonable means of vascular access for patients who undergo dialysis but are not candidates for surgical shunt placement.

Periti P. *[Tobramycin—clinical pharmacology and chemotherapy].* J Chemother. 1996; 8 Suppl 1 : 3-30.p Abstract: Aminoglycosides are potent water-soluble antibiotics, with peak concentration-dependent bactericidal activity against many pathogenic aerobic Gram-negative bacilli and Staphylococcus aureus: they exhibit enduring antibacterial activity many hours after tissue concentrations become negligible and appreciation of this postantibiotic effect is leading to replacement of conventional multiple daily doses by large once-daily doses. Cotreatment with betalactams is commonly employed in order to exploit a synergism between these antimicrobial agents, particularly in severe Gram-negative sepsis. Resistance to aminoglycosides may be observed at several levels and is generally high when due to the acquisition of aminoglycoside modifying enzymes which may be plasmid-borne or transferred by transposable elements. Tobramycin is more effective than gentamicin and the other aminoglycosides against Pseudomonas aeruginosa and is less nephrotoxic than gentamicin. Higher serum tobramycin concentrations at the peak are associated with a longer postantibiotic effect and increased bactericidal activity. A longer dosage interval may decrease the risk of nephrotoxicity because higher transient serum aminoglycoside levels appear to be less nephrotoxic than lower but more persistent serum concentrations. Once-daily administration may also reduce the risk of ototoxicity through a similar mechanism. In a multicenter Italian study of 104 adult patients with severe bacterial lower respiratory tract infections, the safety and efficacy of a regimen of high dose, once-daily tobramycin alone or in combination with antipseudomonas betalactams was assessed. The overall bacteriological response was an elimination of the original pathogen in 70% of the patients while the clinical response mirrored the bacteriological results with a successful clinical outcome in 78% of patients. Adverse experiences were, in general, few and mild without oto- or nephrotoxicity. The once-daily, high dose regimen of tobramycin proved to be a safe and efficacious therapy for severe lower respiratory tract infections in adult patients.

Periti P. et al. *New criteria for selecting the proper antimicrobial chemotherapy for severe sepsis and septic shock.* Int J Antimicrob Agents. 1999; 12(2) : 97-105.p Abstract: The mortality rate resulting from severe bacterial sepsis, particularly that associated with shock, still approaches 50% in spite of appropriate antimicrobial therapy and optimum supportive care. Bacterial endotoxins that are part of the cell wall are one of the cofactors in the pathogenesis of sepsis and septic shock and are often induced by antimicrobial chemotherapy even if it is administered rationally. Not all antimicrobial agents are equally capable of inducing septic shock; this is dependant on their mechanism

of action rather than on the causative pathogen species. The quantity of endotoxin released depends on the drug dose and whether filaments or spheroplast formation predominates. Some antibiotics such as carbapenems, ceftriaxone, cefepime, glycopeptides, aminoglycosides and quinolones do not have the propensity to provoke septic shock because their rapid bactericidal activity induces mainly spheroplast or fragile spheroplast-like bacterial forms.

Periti P. et al. *Antimicrobial prophylaxis in orthopaedic surgery: the role of teicoplanin.* J Antimicrob Chemother. 1998; 41(3) : 329-40.p Abstract: Orthopaedic joint replacement is generally considered 'clean' surgery characterized by a low incidence of infection. In recent years the use of a clean theatre environment, high local concentrations of antibiotic in the cement and systemic antibiotic prophylaxis have been recognized as important measures to reduce infection rates significantly, and this has been supported by clinical trials. Staphylococcus aureus and Staphylococcus epidermidis cause at least half of all orthopaedic surgical infections. Gram-negative bacilli are involved to a much lesser extent (10-30%). First- and second-generation cephalosporins are currently considered by most authors as standard prophylaxis in elective orthopaedic surgery. In the light of the increasing incidence of methicillin resistance in coagulase-positive and -negative staphylococci, it is becoming more important for antibiotics to act efficiently against such organisms if they are to be of value in prophylaxis in orthopaedic surgery. A combined, single-dose of vancomycin/gentamicin has been used successfully in an open, controlled study in patients undergoing total joint arthroplasty but, given the disadvantages associated with the use of vancomycin, teicoplanin may be an alternative choice in such procedures. This review analyses four comparative trials of the efficacy and safety of teicoplanin, two with cefamandole, one with cefuroxime and one with cephazolin, as prophylaxis in orthopaedic total joint replacement surgery.

Perkins M.D. et al. *Rapid bacterial antigen detection is not clinically useful.* J Clin Microbiol. 1995; 33(6) : 1486-91.p Abstract: Latex agglutination (LA) of capsular polysaccharide bacterial antigen is a frequently performed laboratory procedure, but its use is controversial. To assess the clinical utility of this test, we reviewed all LA tests performed over a 10-month period at two sites, a major university-based referral center and a private specialty pediatric hospital. Samples were assayed either individually or as a panel for the group B streptococcus, Streptococcus pneumoniae, Haemophilus influenzae, and three sets of Neisseria meningitidis serogroups (A and Y, C and W135, and B and Escherichia coli K1). Of 5,169 assays performed on 1,268 clinical samples (786 urine and 478 cerebrospinal fluid, 3 pleural fluid, and 1 synovial fluid sample), 57 (1.1%) were positive, including 1.7% of urine and 0.3% of cerebrospinal fluid samples. All LA true-positive cerebrospinal fluid samples showed the causative microorganisms by Gram stain. Detailed chart review of these 57 positive samples showed that the LA result was false-positive in 31 (54%), true-positive in 22 (38%), and indeterminate in 4 (7%) samples. Therapy was not altered on the basis of any of the true-positive LA results. The 31 false-positive results led to additional cost, prolonged hospitalization, and some clinical complications. Total patient charges were $175,000 ($7,954 per true-positive), with no detectable clinical benefit. Our retrospective study does not support the current use of LA for rapid antigen detection. What, if any, specific indications exist for this test remain to be elucidated.

Perl T.M. et al. *New approaches to reduce Staphylococcus aureus nosocomial infection rates: treating S. aureus nasal carriage.* Ann Pharmacother. 1998; 32(1) : S7-16.p Abstract: BACKGROUND: Nosocomial infections cause significant patient morbidity and mortality. The 2.5 million nosocomial infections that occur each year cost the US healthcare system $5 million to $10 million. Staphylococcus aureus has long been recognized as an important pathogen in human disease and is the most common cause of nosocomial infections. OBJECTIVE: To describe the epidemiology of S. aureus nosocomial infections that are attributable to patients' endogenous colonization. DATA SOURCES: Review of the English-language literature and a MEDLINE search (as of September 1997). DATA SYNTHESIS: The ecologic niche of S. aureus is the anterior nares. The prevalence of S. aureus nasal carriage is approximately 20-25%, but varies among different populations, and is influenced by age, underlying illness, race, certain behaviors, and the environment in which the person lives or works. The link between S. aureus nasal carriage and development of subsequent S. aureus infections has been established in patients on hemodialysis, on continuous ambulatory peritoneal dialysis, and those undergoing surgery. S. aureus nasal carriers have a two-to tenfold increased risk of developing S. aureus surgical site or intravenous catheter infections. Thirty percent of 100% of S. aureus infections are due to endogenous flora and infecting strains were genetically identical to nasal strains. Three treatment strategies may eliminate nasal carriage: locally applied antibiotics or disinfectants, systemic antibiotics, and bacterial interference. Among these strategies, locally applied or systemic antibiotics are most commonly used. Nasal ointments or sprays and oral antibiotics have variable efficacy and their use frequently results in antimicrobial resistance among S. aureus strains. Of the commonly used agents, mupirocin (pseudomonic acid) ointment has been shown to be 97% effective in reducing S. aureus nasal carriage. However, resistance occurs when the ointment has been applied for a prolonged period over large surface areas. CONCLUSIONS: Given the importance of S. aureus nosocomial infections and the increased risk of S. aureus nasal carriage in patients with nosocomial infections, investigators need to study cost-effective strategies to prevent certain types of nosocomial infections or nosocomial infections that occur in specific settings. One potential strategy is to decrease S. aureus nasal carriage among certain patient populations.

Perlada D.E. et al. *Molecular epidemiology and antibiotic susceptibility of enterococci in Cincinnati, Ohio: a prospective citywide survey.* J Clin Microbiol. 1997; 35(9) : 2342-7.p Abstract: To determine patterns of antimicrobial susceptibility among enterococci and to assess molecular characteristics of vancomycin-resistant enterococci, 157 clinical blood isolates of enterococci from 10 hospitals in Cincinnati, Ohio, were prospectively collected during a 6-month period from February to July 1995. The isolates included 108 (69%) E. faecalis isolates, 46 (29%) E. faecium isolates, and 1 isolate each of E. avium, E. durans, and E. gallinarum. The E. faecalis and E. faecium isolates differed in their susceptibilities to ampicillin (100 versus 20%), ampicillin-sulbactam (100 versus 13%), vancomycin (100 versus 57%), imipenem (94 versus 2%), and high levels of gentamicin (59 versus 83%). Supplemental susceptibility testing of the 21 vancomycin-resistant isolates showed that 21 (100%) were susceptible to chloramphenicol and that only 7 (33%) were susceptible to doxycycline. Nineteen (90%) of the vancomycin-resistant E. faecium isolates were of the VanB phenotype, with vanB resistance genes detected by PCR and hybridization with gene-specific probes; and the E. gallinarum isolates demonstrated the VanC phenotype with the vanC1 gene. One vancomycin-resistant E. faecium isolate was highly resistant to both teicoplanin and vancomycin, corresponding to the VanA phenotype; however, it was found to have the vanB gene. Pulsed-field gel electrophoresis (PFGE) revealed that all of the 19 E. faecium isolates with the VanB phenotype had identical to closely related banding patterns. Hybridization of restriction enzyme-digested DNA separated by PFGE with a vanB gene probe demonstrated differences in the locations of vanB genes that corresponded closely to the PFGE banding patterns. Our study has documented that the emerging vancomycin resistance in our city was mainly due to the clonal dissemination of a single strain of E. faecium VanB.

Perng C.L. et al. *One-week triple therapy with lansoprazole, clarithromycin, and metronidazole to cure Helicobacter pylori infection in peptic ulcer disease in Korea.* Dig Dis Sci. 1998; 43(3) : 464-7.p Abstract: The efficacy and acceptability of classical bismuth triple therapy may be limited by poor patient compliance and adverse effects. It is widely

agreed that improved, simpler, and reliable therapies are needed to cure Helicobacter pylori infection and foster patient compliance. We evaluated the efficacy and side effects of a Bazzoli triple therapy substituting lansoprazole for omeprazole for H. pylori infection in active peptic ulcer in Korea (30 mg of lansoprazole, 250 mg of clarithromycin, and 400 mg of metronidazole, all twice daily). H. pylori status was evaluated by rapid urease test, histology, and culture at entry and four or more weeks after ending antimicrobial therapy. Fifty-eight patients (mean age: 43 years) with gastric (N = 30) or duodenal ulcer (N = 28) and H. pylori infection were studied. H. pylori was cured in 47 (81%, 95% CI = 69-90%). Mild side effects, including vomiting, diarrhea, and itching, were observed in four patients (7%). Compliance averaged 95%. Fifty-five ulcers (95%) were healed. Pretreatment pylorobulbar deformity was observed in 49 patients (85%), and in 43 (88%) the deformity disappeared after treatment. Pretreatment metronidazole and clarithromycin resistance was observed in 87% and 2% of patients, respectively. The cure rate of H. pylori infection was significantly higher in patients >50 years of age than those <50. Treatment with low-dose one-week lansoprazole, clarithromycin, and metronidazole resulted in a relatively low cure rate, but was well tolerated. Studies to define the optimal duration, dose, and dosing interval of this combination therapy in Korea are needed.

Perrin M. et al. *Comparative antimicrobial resistance and genomic diversity of Escherichia coli isolated from urinary tract infections in the community and in hospitals.* J Hosp Infect. 1999; 41(4) : 273-9.p Abstract: Well-defined community- and nosocomially-acquired isolates of Escherichia coli responsible for urinary tract infections were studied for their resistance to beta-lactams, quinolones, and co-trimoxazole, antibiotics widely used for treatment of urinary infections. For each strain, an antibiogram was obtained using the Vitek automat, which estimates the minimal inhibitory concentrations of various drugs. Nosocomial strains were significantly more amoxycillin-resistant than community strains (P = 0.01) and were also significantly more resistant to co-trimoxazole (P = 0.025) and first generation quinolones (P = 0.02) than the latter. To determine whether this was due to transmission of strains within the hospital, DNA restriction patterns, established using XbaI enzyme and separation by pulsed-field gel electrophoresis, were compared. Extreme genomic diversity was found among both the community and nosocomial strains. The increased frequency of resistance among nosocomial strains is thus not due to transmission of resistant hospital strains but probably results from the selection of resistant strains from the endogenous flora of patients.

Perrone M. et al. *Antigenic characterization of fimbria preparations from Streptococcus mutans isolates from caries-free and caries-susceptible subjects.* Clin Diagn Lab Immunol. 1997; 4(3) : 291-6.p Abstract: The adhesion of pathogenic bacteria to the host surface is an essential step in the development of numerous infections, including dental caries. Attachment of Streptococcus mutans, the main etiological agent of human dental caries, to the tooth surface may be mediated by glucan synthesized by glucosyltransferase (GTF) and by cell surface proteins, such as P1, which bind to salivary receptors. Fimbriae on the surfaces of many microorganisms are known to function in bacterial adhesion. Previous studies in this laboratory have initially characterized the fibrillar surface of S. mutans. The purpose of this investigation was the comparison of the antigenic properties of fimbria preparations of S. mutans isolates from five caries-resistant (CR) and six caries-susceptible (CS) subjects. Sodium dodecyl sulfate-polyacrylamide gel electrophoresis analysis of S. mutans fimbrial preparations revealed five major protein bands at 200, 175, 157, 86, and 66 kDa in preparations from CR and CS subjects. Immunoblot analysis indicated the presence of the same major bands recognized by anti-S. mutans fimbria antisera. Furthermore, the 175- and 157-kDa bands were recognized by antibodies to P1 and GTF, respectively. Immunoblot analysis with antisera to the fimbria preparation, to P1, or to GTF indicated that the levels of fimbria-reactive components and P1 and GTF antigens were higher in S. mutans fimbria preparations from CS subjects than in those from CR individuals. For example, four of six fimbria preparations from CS patients had demonstrable P1, and all had GTF. In contrast, only two of five CR fimbrial preparations exhibited P1 and GTF. Enzyme-linked immunosorbent assay demonstrated similar results for levels of GTF antigen in the fimbrial preparations from CR and CS subjects. The results suggest that differences between the compositions of S. mutans fimbriae in CR and CS individuals may play an important role in the virulence of this microorganism in dental caries.

Perry C.M. et al. *Piperacillin/tazobactam: an updated review of its use in the treatment of bacterial infections.* Drugs. 1999; 57(5) : 805-43.p Abstract: Piperacillin/tazobactam is a beta-lactam/beta-lactamase inhibitor combination with a broad spectrum of antibacterial activity encompassing most Gram-positive and Gram-negative aerobic bacteria and anaerobic bacteria, including many pathogens producing beta-lactamases. Evidence from clinical trials in adults has shown that piperacillin/tazobactam, administered in an 8:1 ratio, is an effective treatment for patients with lower respiratory tract, intra-abdominal, urinary tract, gynaecological and skin/soft tissue infections, and for fever in patients with neutropenia. Combination regimens of piperacillin/tazobactam plus an aminoglycoside are used to treat patients with severe nosocomial (hospital-acquired) infections. In clinical trials, piperacillin/tazobactam was significantly more effective than ticarcillin/clavulanic acid in terms of clinical and microbiological outcome in patients with community-acquired pneumonia. In patients with intra-abdominal infections, clinical and bacteriological response rates were significantly higher with piperacillin/tazobactam than with imipenem/cilastatin (administered at a dosage lower than is recommended in countries outside Scandinavia). Piperacillin/tazobactam in combination with amikacin was at least as effective as ceftazidime plus amikacin in the treatment of ventilator-associated pneumonia and was significantly more effective than ceftazidime plus amikacin in the empirical treatment of febrile episodes in patients with neutropenia or granulocytopenia. In other trials, the efficacy of piperacillin/tazobactam was similar to that of standard aminoglycoside-containing and other treatment regimens in patients with intra-abdominal, skin/soft tissue or gynaecological infections. Piperacillin/tazobactam is generally well tolerated. The most frequent adverse events are gastrointestinal symptoms (most commonly diarrhoea) and skin reactions. The incidence of adverse events with piperacillin/tazobactam is higher when the combination is given in combination with an aminoglycoside than when given as monotherapy. CONCLUSION: Because of the broad spectrum of antibacterial activity provided by piperacillin/tazobactam, it is useful for the treatment of patients with polymicrobial infections caused by aerobic or anaerobic beta-lactamase-producing bacteria. Piperacillin/tazobactam appears to have a particularly useful role in the treatment of patients with intra-abdominal infections and, in combination with amikacin, in the treatment of patients with febrile neutropenia, especially given the current prevalence of Gram-positive infections in this group.

Perú. Ministerio de Salud. *Vigilancia de la resistencia a los medicamentos antituberculosos en el Perú 1995-1996*; Lima. MINSA. 1996; 28.p Abstract: Encuesta sobre resistencia a medicamentos antituberculosos completada en una muestra de 1958 pacientes nuevos y antes tratados, diagnosticados en 814 establecimientos de salud, situados en 31 regions y sub regines del país, donde habita el 98 por ciento de la población del Perú y donde se detecta el 99 por ciento de los casos de tuberculosis.

Peschel A. et al. *Inactivation of the dlt operon in Staphylococcus aureus confers sensitivity to defensins, protegrins, and other antimicrobial peptides.* J Biol Chem. 1999; 274(13) : 8405-10.p Abstract: Positively charged antimicrobial peptides with membrane-damaging activity are produced by animals and humans as components of their innate immunity against bacterial infections and also by many bacteria to inhibit

competing microorganisms. Staphylococcus aureus and Staphylococcus xylosus, which tolerate high concentrations of several antimicrobial peptides, were mutagenized to identify genes responsible for this insensitivity. Several mutants with increased sensitivity were obtained, which exhibited an altered structure of teichoic acids, major components of the Gram-positive cell wall. The mutant teichoic acids lacked D-alanine, as a result of which the cells carried an increased negative surface charge. The mutant cells bound fewer anionic, but more positively charged proteins. They were sensitive to human defensin HNP1-3, animal-derived protegrins, tachyplesins, and magainin II, and to the bacteria-derived peptides gallidermin and nisin. The mutated genes shared sequence similarity with the dlt genes involved in the transfer of D-alanine into teichoic acids from other Gram-positive bacteria. Wild-type strains bearing additional copies of the dlt operon produced teichoic acids with higher amounts of D-alanine esters, bound cationic proteins less effectively and were less sensitive to antimicrobial peptides. We propose a role of the D-alanine-esterified teichoic acids which occur in many pathogenic bacteria in the protection against human and animal defense systems.

Petdachai W. *Nosocomial pneumonia in a newborn intensive care unit.* J Med Assoc Thai. 2000; 83(4) : 392-7.p Abstract: Nosocomial pneumonia is a major cause of morbidity and mortality in hospitalized patients. The risk is especially high in the neonatal intensive care unit (NICU) particularly in infants with mechanically assisted ventilation. During the 5-year period of the study, 160 infants with problems including prematurity (60.6%), respiratory distress (55.6%) and birth asphyxia (45.0%) were admitted to the NICU. One hundred and thirty-three infants (83.1%) received mechanical ventilation. Nosocomial pneumonia was found in 65 infants (40.6%) or 88.3 cases per 1,000 ventilator-days. Low birth weight, prematurity, respiratory distress and hyperbilirubinemia were found more significantly in the pneumonia group. They underwent more manipulations such as the placement of an umbilical catheter and orogastric tube. Infants with pneumonia received mechanical ventilation at a higher percentage and for a longer period than those without pneumonia (96.9% vs 73.7%, odds ratio = 11.2, p = 0.000) with a mean duration of 11.7 and 3.5 days respectively (p = 0.000). The etiologic organisms recovered from hemoculture were Acinetobacter calcoaceticus var. anitratus 44.0 per cent, Enterobacter spp. 16.0 per cent, Klebsiella pneumoniae 16.0 per cent, coagulase-negative staphylococci 12.0 per cent. There was no concordance of the bacteriologic results in endotracheal aspirate culture and hemoculture in each infant. Leukocytosis and granulocytosis as well as blood gas values could not differentiate the presence of pneumonia. The mean hospital stay for the infants with pneumonia was longer (23.0 days vs 6.4 days, p = 0.000). Nosocomial pneumonia did not only prolong hospital stay but also contributed to mortality. Twenty-seven (41.5%) of the infants with pneumonia died, compared with 46 (48.4%) of the other group without pneumonia (p = 0.422). The risk of nosocomial pneumonia can be reduced by using infection control measures, including meticulous hand washing and gloving during respiratory manipulation, heat-treated water supply in a nebulizing unit of the ventilator and proper care of umbilical catheterization.

Peters M. et al. *Superior vena cava thrombosis causing respiratory obstruction successfully resolved by stenting in a small bowel transplant candidate.* Arch Dis Child. 2000; 83(2) : 163-4.p Abstract: A 4 year old child was referred for small bowel transplantation. He had superior vena cava obstruction secondary to numerous central venous line placements; alternative routes for long term central venous access were compromised by extensive venous occlusive disease. Patency for the superior vena cava was re-established with stenting, which allowed for radiological placement of another central venous line. Long term survival in infants and young children with intestinal failure is dependent on adequate central venous access for the administration of parenteral nutrition. Line sepsis and physical damage to the catheter often necessitates multiple central venous catheter placements during their early life and these children are at risk of catheter related veno-occlusive disease. Recurrent sepsis and the loss of satisfactory venous access for the administration of parenteral nutrition is life threatening and is an indication for intestinal transplantation in up to 41% of patients reported by the small bowel registry.

Peterson L.R. et al. *Management of fluoroquinolone resistance in Pseudomonas aeruginosa—outcome of monitored use in a referral hospital.* Int J Antimicrob Agents. 1998; 10(3) : 207-14.p Abstract: We evaluated a strategy designed to improve useful activity of ciprofloxacin against Pseudomonas aeruginosa. Following changes in antimicrobial agent use made by the institutional Pharmacy and Therapeutic Drug Committee, monthly drug usage and microbial susceptibility records from June 1992 through October 1995 were reviewed. From July 1992 through October 1992 (Period 1), ciprofloxacin and ofloxacin usage represented 95 and 5% of total quinolone doses; from December 1992 to March 1993 (Period 2), ciprofloxacin represented 19%; from July 1993 to October 1993 (Period 3), ciprofloxacin usage represented 85%; from July 1994 to October 1994 (Period 4), ciprofloxacin represented 95%; and from July 1995 to October 1995 (Period 5), ciprofloxacin and ofloxacin respectively represented 98 and 2% of total quinolone doses. Comparison of the anti-pseudomonal activity of the two fluoroquinolones to ofloxacin use, ciprofloxacin use and total quinolone use during the entire observational period showed the highest (negative) correlation with ofloxacin use versus ofloxacin activity (y = -15.04x + 1367.99, r2 = 0.06, w = 0.126). Increased use of quinolones plus a change to primarily ofloxacin usage appeared to adversely affect the activity of both ofloxacin and ciprofloxacin against P. aeruginosa.

Peterson L.R. et al. *Use of the clinical microbiology laboratory for the diagnosis and management of infectious diseases related to the oral cavity.* Infect Dis Clin North Am. 1999; 13(4) : 775-95.p Abstract: Our knowledge regarding the pathogenesis of infections relative to the oral cavity is rapidly expanding, similar to our overall understanding of how infectious diseases impact our daily lives. The complexity of the flora within the oral cavity is quite unique and often makes diagnosis difficult; however, it is becoming more apparent that accurate diagnostic testing is important from the standpoint of focusing appropriate therapy on pathogens within this crucial body site, and avoiding overuse of antimicrobial agents in settings of infection where they have no demonstrated benefit. New diagnostic methods are being developed to detect pathogens and rapidly delineate resistance patterns. Many will be based on new genetic assays, but they must be cost effective, sensitive, and specific. Another growing challenge is to provide adequate lab support to outpatient offices and clinics, without compromising the specimen culture or turnaround times. So many patients are being seen away from hospital laboratories that we need ways to diagnose sinusitis, pharyngitis, abscess, and other infections of the oral cavity without killing the anaerobes and other significant facultative bacteria, and without ruining the direct stains by overgrowth or inflammatory cell degradation during specimen transport. These results need to be available quickly enough to give useful information for office diagnosis in order to effect therapy. To optimize both diagnosis and treatment, a key to the future will be better communication between the clinical practitioner and laboratory, with an increasing emphasis on training expertise in medical microbiology and infectious diseases.

Peterson P.K. et al. *Morphine stimulates phagocytosis of Mycobacterium tuberculosis by human microglial cells: involvement of a G protein-coupled opiate receptor.* Adv Neuroimmunol. 1995; 5(3) : 299-309.p Abstract: Opiate-induced immunosuppression has been implicated in the pathogenesis of infections caused by a variety of microorganisms, including human immunodeficiency virus (HIV). Although effects of opiates on lymphocyte function have been studied more extensively, morphine also has been shown to inhibit several functional activities of mononuclear phagocytes (e.g. chemotaxis, respiratory

burst activity and phagocytosis). Opiate addiction has been identified as a risk factor for clinical tuberculosis prior to the HIV epidemic, and macrophages are a key cell in the pathogenesis of Mycobacterium tuberculosis. Thus, the hypothesis was tested in the present study that morphine would suppress phagocytosis of M. tuberculosis by human microglial cells, the resident macrophages of the brain. Contrary to this hypothesis, treatment of human fetal microglial cell cultures with morphine (10(-8) M) was found to stimulate phagocytosis of nonopsonized M. tuberculosis H37Rv. The stimulatory effect of morphine was blocked by naloxone and the mu opiate receptor selective antagonist beta-funaltrexamine. Also, morphine-induced increase in phagocytic activity was markedly inhibited by pertussis toxin and was unaffected by cholera toxin, suggesting the mechanism of morphine's stimulatory effect on microglial cell phagocytosis involves a Gi protein-coupled mu opiate receptor. The results of this in vitro study support the concept that exogenous and endogenous opioids play an immunomodulatory role within the central nervous system through their interaction with G protein-coupled receptors on microglial cells.

Petersson L.G. et al. *The effect of a low fluoride containing toothpaste on the development of dental caries and microbial composition using a caries generating model device in vivo.* Swed Dent J. 1995; 19(3) : 83-94.p Abstract: The purpose of the study was to evaluate the effect of daily use of a low fluoride containing toothpaste (250 ppm F) on the uptake of fluoride and development of enamel lesions as well as the prevalence of lactobacilli and mutans streptococci in dental plaque compared to the use of placebo toothpaste. 16 children were selected with homologous premolar teeth. The teeth were cemented with orthodontic bands ad modum Ogaard for plaque accumulation and enamel lesion development. The plaque accumulated during 4 weeks was collected and analysed for lactobacilli and mutans streptococci. The teeth were further analysed by secondary ion mass spectrometry (SIMS), determining the concentration profiles of fluoride and other elements in the outermost enamel and in the lesion. The results show that although significant amounts of fluoride were taken up in the surface enamel from the fluoride toothpaste, the extent of the lesions was not influenced compared to teeth brushed with a non F-toothpaste. Neither were microbiological differences in the dental plaque found between the groups. An interesting observation was that early demineralization of enamel took place without detectable levels of mutans streptococci in the overlaying dental plaque. The conclusion is that fluoride taken up in enamel from F-toothpaste has no significant influence on enamel lesion development if a cariogenic dental plaque with high levels of acid producing microorganisms is continuously attached to the enamel surface.

Petit P.L. et al. *Bacteraemia in patients presenting with fever.* East Afr Med J. 1995; 72(2) : 116-20.p Abstract: In three studies, in Ghana and Kenya, blood from 639 patients admitted with fever was cultured. Standard treatments were antimalarials (54-100%) and antibiotics (39-90%). According to the criteria in use, however, only 10-31% had malaria alone; of those who received antibiotics, 66% were diagnosed with malaria, gastrointestinal infections, post-operative recuperations, circulatory problems, central nervous system disorders or FUO, and did not need antibiotics at the first encounter. For those with wounds and abscesses (8%), generalised antibiotic treatment can also be questioned. Bacteraemia was found in 71 (11.3%) patients; in the HIV patients, however, 5 (23%) of 22 had bacteraemia. This is a minimum incidence, since culture techniques were not optimal for the isolation of fastidious microorganisms. The most prevalent organisms isolated were Salmonella, Klebsiella/Enterobacter and S. aureus. Resistance (intrinsic and extrinsic) in the Gram- bacteria was high: 31-100% were resistant to amoxycillin, 0-80% to cotrimoxazole, 15-95% to chloramphenicol and 9-15% to gentamicin. The need for cultures and sensitivity tests for patients with prolonged or undiagnosed fever is stressed. Specific treatment should be given only when infections, whether malarial or bacterial, have been positively diagnosed.

Petrilli A.S. et al. *Oral ciprofloxacin vs. intravenous ceftriaxone administered in an outpatient setting for fever and neutropenia in low-risk pediatric oncology patients: randomized prospective trial.* Med Pediatr Oncol. 2000; 34(2) : 87-91.p Abstract: BACKGROUND: Infections are one of the major complications in children undergoing chemotherapy. Monotherapy with either ciprofloxacin or ceftriaxone is safe and efficient in low-risk patients (solid tumors and stage I/II lymphomas). The same drugs may be used in an outpatient setting, decreasing costs and the risk of nosocomial infections. PROCEDURE: Low-risk patients (N = 70) with episodes of fever and neutropenia (N = 116) were randomized to receive either oral ciprofloxacin or intravenous ceftriaxone as outpatients. Only one patient had a central venous catheter. RESULTS: Episodes of fever and neutropenia were classified as fever of unknown origin (41% vs. 32%) or clinically documented infection (56% vs. 63%) in the ciprofloxacin and ceftriaxone groups, respectively. Most of these infections were of upper respiratory tract, skin, or gastrointestinal origin. The mean duration of neutropenia was 5 vs. 6 days. Fever persisted for 1-9 days (mean 2 vs. 3 days). Therapy was successful with no modifications in 83% vs. 75% of the episodes. Patients were admitted in 7% vs. 4% of the episodes. No bone or joint side effects were seen in either group. All patients survived. CONCLUSIONS: Outpatient therapy with either oral ciprofloxacin or intravenous ceftriaxone for fever and neutropenia is effective and safe in pediatric patients with solid tumors and stage I/II non-Hodgkin lymphoma (low-risk patients). Copyright 2000 Wiley-Liss, Inc.

Petrovskaia V.G. et al. *[The gentic principles for the design of live Salmonella vaccines].* Zh Mikrobiol Epidemiol Immunobiol. 1996; (3) : 25-8.p Abstract: The presently known methods of obtaining Salmonella vaccine strains are characterized, their advantages and drawbacks are noted. Great importance of the genetic safety of Salmonella attenuated strains to be controlled is emphasized, taking into account that they are also used as carrier strains for obtaining hybrid and gene-engineering (vector) vaccines carrying immunogenicity factors of other species of pathogenic microorganisms.

Peyron P. et al. *Nonopsonic phagocytosis of mycobacterium kansasii by human neutrophils depends on cholesterol and is mediated by CR3 associated with glycosylphosphatidylinositol-anchored proteins.* J Immunol. 2000; 165(9) : 5186-91.p Abstract: Receptors involved in the phagocytosis of microorganisms under nonopsonic conditions have been little studied in neutrophils. Complement receptor type 3 (CR3) is a pattern recognition receptor able to internalize zymosan and C3bi-coated particles. We report that Abs directed against CR3 strongly inhibited nonopsonic phagocytosis of Mycobacterium kansasii in human neutrophils. In these cells CR3 has been found associated with several GPI-anchored proteins localized in cholesterol-rich microdomains (rafts) of the plasma membrane. Cholesterol sequestration by nystatin, filipin, or beta-cyclodextrin as well as treatment of neutrophils with phosphatidylinositol phospholipase C to remove GPI-anchored proteins from the cell surface markedly inhibited phagocytosis of M. kansasii, without affecting phagocytosis of zymosan or serum-opsonized M. kansasii. Abs directed against several GPI-anchored proteins inhibited phagocytosis of M. kansasii, but not of zymosan. N:-acetyl-D-glucosamine, which is known to disrupt interactions between CR3 and GPI proteins, also strongly diminished phagocytosis of these mycobacteria. In conclusion, phagocytosis of M. kansasii involved CR3, GPI-anchored receptors, and cholesterol. In contrast, phagocytosis of zymosan or opsonized particles involved CR3, but not cholesterol or GPI proteins. We propose that CR3, when associated with a GPI protein, relocates in cholesterol-rich domains where M. kansasii are internalized. When CR3 is not associated with a GPI protein, it remains outside of these domains and mediates phagocytosis of zymosan and opsonized particles, but not of M. kansasii.

Pfaller M.A. et al. *A review of the in vitro activity of meropenem and comparative antimicrobial agents tested against 30,254 aerobic and anaerobic*

pathogens isolated world wide. Diagn Microbiol Infect Dis. 1997; 28(4) : 157-63.p Abstract: The in vitro activity of meropenem (formerly SM-7738), a new carbapenem, was compared with that of imipenem and five other broad-spectrum antimicrobials (ceftazidime, cefotaxime, piperacillin, piperacillin/tazobactam, and ciprofloxacin) against 30,254 clinically significant pathogens isolated in nine countries worldwide. Overall, the carbapenems, meropenem and imipenem, were the most active drugs. Meropenem was four- to 64-fold more active than imipenem against Gram-negative bacteria, including the Enterobacteriaceae, Pseudomonas aeruginosa, Burkholderia cepacia, Haemophilus influenzae, and Neisseria meningitidis. Meropenem was also quite active against ceftazidime-resistant strains of Enterobacteriaceae, inhibiting 87.5 to 100% at < or = 4 micrograms/ml. In contrast, imipenem was four- to eight-fold more active than meropenem against Gram-positive species, including methicillin-susceptible strains of Staphylococcus aureus and Staphylococcus epidermidis, Streptococcus pneumoniae, and Enterococcus faecalis. Among the anaerobes, strains resistant to meropenem or imipenem were encountered very rarely. These extensive data provide additional in vitro support for the clinical use of meropenem as a broad spectrum antimicrobial agent active against key pathogenic species of bacteria.

Pfaller M.A. et al. *Multicenter evaluation of the antimicrobial activity for six broad-spectrum beta-lactams in Venezuela using the Etest method. The Venezuelan Antimicrobial Resistance Study Group.* Diagn Microbiol Infect Dis. 1998; 30(1) : 45-52.p Abstract: In early 1997, a 15-laboratory surveillance project was initiated in Venezuela to monitor the potency and spectrum of 6 broad-spectrum antimicrobial agents (cefepime, cefotaxime, ceftazidime, piperacillin, piperacillin/tazobactam, and imipenem) tested against approximately 100 organisms per participant center (1297 strains). Ten groups of organisms were tested by the Etest method (AB BIODISK, Solna, Sweden) with results validated by concurrent quality control strain analysis. Results from all centers were tabulated and 96.3% of quality assurance tests were within ranges recommended by the National Committee for Clinical Laboratory Standards. Among the six beta-lactam class drugs tested, imipenem and cefepime were the most active against all isolates tested. Overall, the rank order of susceptibility of the six agents was imipenem (97.2%, susceptible; MIC90 2 micrograms/ml) > cefepime (92.8%; MIC90 6 micrograms/mL) > piperacillin/tazobactam (77.2-83.0%; MIC90 > 256 micrograms/mL) > cefotaxime (72.2%; MIC90 > 256 micrograms/mL) > piperacillin (56.8-65.8%; MIC90 > 256 micrograms/mL) > ceftazidime (64.66%; MIC90 128 micrograms/mL). Both cefepime and imipenem were active against ceftazidime-resistant strains of Enterobactericaeae as well as against Pseudomonas aeruginosa and oxacillin-susceptible staphylococci. Resistance phenotypes consistent with extended spectrum beta-lactamases (ESBLs) and stably derepressed Bush group 1 cephalosporinases were documented in strains of Klebsiella spp. and Enterobacters, respectively. These data should be used to guide empiric therapy with beta-lactams in Venezuela, and additionally will provide a reference statistical baseline to which future studies in this nation can be compared.

Pfaller M.A. et al. *Bacterial pathogens isolated from patients with bloodstream infection: frequencies of occurrence and antimicrobial susceptibility patterns from the SENTRY antimicrobial surveillance program (United States and Canada, 1997).* Antimicrob Agents Chemother. 1998; 42(7) : 1762-70.p Abstract: The SENTRY Program was established in January 1997 to measure the predominant pathogens and antimicrobial resistance patterns of nosocomial and community-acquired infections over a broad network of sentinel hospitals in the United States (30 sites), Canada (8 sites), South America (10 sites), and Europe (24 sites). During the first 6-month study period (January to June 1997), a total of 5,058 bloodstream infections (BSI) were reported by North American SENTRY participants (4,119 from the United States and 939 from Canada). In both the United States and Canada, Staphylococcus aureus and Escherichia coli were the most common BSI isolates, followed by coagulase-negative staphylococci and enterococci. Klebsiella spp., Enterobacter spp., Pseudomonas aeruginosa, Streptococcus pneumoniae, and beta-hemolytic streptococci were also among the 10 most frequently reported species in both the United States and Canada. Although the rank orders of pathogens in the United States and Canada were similar, distinct differences were noted in the antimicrobial susceptibilities of several pathogens. Overall, U.S. isolates were considerably more resistant than those from Canada. The differences in the proportions of oxacillin-resistant S. aureus isolates (26.2 versus 2.7% for U.S. and Canadian isolates, respectively), vancomycin-resistant enterococcal isolates (17.7 versus 0% for U.S. and Canadian isolates, respectively), and ceftazidime-resistant Enterobacter sp. isolates (30.6 versus 6.2% for U.S. and Canadian isolates, respectively) dramatically emphasize the relative lack of specific antimicrobial resistance genes (mecA, vanA, and vanB) in the Canadian microbial population. Among U.S. isolates, resistance to oxacillin among staphylococci, to vancomycin among enterococci, to penicillin among pneumococci, and to ceftazidime among Enterobacter spp. was observed in both nosocomial and community-acquired pathogens, although in almost every instance the proportion of resistant strains was higher among nosocomial isolates. Antimicrobial resistance continues to increase, and ongoing surveillance of microbial pathogens and resistance profiles is essential on national and international scales.

Pfaller M.A. et al. *Survey of blood stream infections attributable to gram-positive cocci: frequency of occurrence and antimicrobial susceptibility of isolates collected in 1997 in the United States, Canada, and Latin America from the SENTRY Antimicrobial Surveillance Program. SENTRY Participants Group.* Diagn Microbiol Infect Dis. 1999; 33(4) : 283-97.p Abstract: The SENTRY Antimicrobial Surveillance Program was established in January, 1997 to monitor the predominant pathogens and antimicrobial resistance patterns of nosocomial and community-acquired infections via a network of sentinel hospitals in the United States (30 sites), Canada (eight sites), Latin America (10 sites), and Europe (24 sites). During the first 12-month study period (January to December, 1997), a total of 9519 blood stream infections (BSI) were reported by SENTRY participants in the U.S. (6150), Canada (1727), and Latin America (1642). The Gram-positive cocci, Staphylococcus aureus, coagulase-negative staphylococci (CoNS), enterococci, and streptococci accounted for 53.9% (5131 infections) of all BSI (56.5% U.S., 55.7% Canada, and 42.9% Latin America). The staphylococci, Enterococcus spp., S. pneumoniae, beta-hemolytic streptococci, and viridans group streptococci accounted for 6 of the top 11 BSI pathogens in the U.S. and Canada, whereas only S. aureus (1st), CoNS (3rd), and Enterococcus spp. (9th) were among the top 11 pathogens in Latin American hospitals. The results of this survey affirm the importance of Gram-positive cocci as causes of BSI in both North America and Latin America and demonstrate that important antimicrobial resistance exists among isolates of staphylococci, streptococci, and enterococci from all three geographic regions. This includes oxacillin-resistance among S. aureus (26.9% U.S., 29.2% Latin America, and 4.0% Canada) and CoNS (71.5% U.S., 68.4% Latin America, and 65.6% Canada), penicillin resistance among viridans group streptococci (48.5% U.S., 45.1% Canada, and 33.3% Latin America) and pneumococci (36.1% U.S., 27.5% Canada, and 65.6% Latin America), high-level resistance (HLR) to aminoglycosides among enterococci (27.2 to 70.1% U.S., 33.3 to 75.7% Canada and 16.7 to 51.5% Latin America), and macrolide resistance among beta-hemolytic streptococci (12.4 to 14.2% U.S., 10.5 to 12.3% Canada, and 0.0 to 4.0% Latin America), viridans group streptococci (32.4 to 39.7% U.S., 22.5-35.2% Canada, and 20.0% Latin America), and pneumococci (10.0 to 10.6% U.S., 9.8-10.8% Canada, and 9.4-18.7% Latin America). BSI isolates of Gram-positive cocci from the U.S. and Latin America were considerably more resistant than those from Canada. New agents with Gram-positive activity will be essential for optimal treatment of BSI attributable to Gram-positive cocci in both North and Latin America.

Pfaller M.A. et al. *Bloodstream infections due to Candida species: SENTRY antimicrobial surveillance program in North America and Latin America, 1997-1998.* Antimicrob Agents Chemother. 2000; 44(3) : 747-51.p Abstract: An international program of surveillance of bloodstream infections (BSI) in the United States, Canada, and Latin America detected 306 episodes of candidemia in 34 medical centers (22 in the United States, 6 in Canada, and 6 in Latin America) in 1997 and 328 episodes in 34 medical centers (22 in the United States, 5 in Canada, and 7 in Latin America) in 1998. Of the 634 BSI, 54.3% were due to Candida albicans, 16.4% were due to C. glabrata, 14.9% were due to C. parapsilosis, 8.2% were due to C. tropicalis, 1.6% were due to C. krusei, and 4.6% were due to other Candida spp. The percentage of BSI due to C. albicans decreased very slightly in the United States between 1997 and 1998 (56.2 to 54.4%; P = 0.68) and increased in both Canada (52.6 to 70.1%; P = 0.05) and Latin America (40.5 to 44. 6%; P = 0.67). C. glabrata was the second most common species observed overall, and the percentage of BSI due to C. glabrata increased in all three geographic areas between 1997 and 1998. C. parapsilosis was the third most prevalent BSI isolate in both Canada and Latin America, accounting for 7.0 and 18.5% of BSI, respectively. Resistance to fluconazole (MIC, >/=64 microgram/ml) and itraconazole (MIC, >/=1.0 microgram/ml) was observed infrequently in both 1997 (2.3 and 8.5%, respectively) and 1998 (1.5 and 7.6%, respectively). Among the different species of Candida, resistance to fluconazole and itraconazole was observed in C. glabrata and C. krusei, whereas isolates of C. albicans, C. parapsilosis, and C. tropicalis were all highly susceptible to both fluconazole (98.9 to 100% susceptible) and itraconazole (96.4 to 100% susceptible). Isolates from Canada and Latin America were generally more susceptible to both triazoles than U.S. isolates were. Continued surveillance appears necessary to detect these important changes.

Pfaller M.A. et al. *Multicenter evaluation of antimicrobial resistance to six broad-spectrum beta-lactams in Colombia: comparison of data from 1997 and 1998 using the Etest method. The Colombian Antimicrobial Resistance Study Group.* Diagn Microbiol Infect Dis. 1999; 35(3) : 235-41.p Abstract: The minimum inhibitory concentrations of six broad-spectrum beta-lactam antimicrobial agents were determined in 1998 by use of the Etest versus a total of 823 bacteria in 11 Colombian hospital laboratories. These data were compared with results of a similar study conducted in 1997. The organisms tested included 532 recent clinical isolates of Enterobacteriaceae, 108 Pseudomonas aeruginosa, 94 Acinetobacter species, and 89 oxacillin-susceptible Staphylococcus aureus. Extended-spectrum beta-lactamase production was noted among 27.8 to 33.9% of Escherichia coli isolates and 41.7 to 46.7% of Klebsiella spp. isolates. Hyperproduction of Amp C cephalosporinases was observed with 10.5 to 31.4% of isolates of Enterobacter spp., Serratia spp., and Citrobacter spp. An increase in resistance to all of the beta-lactams was observed among Enterobacteriaceae, Acinetobacter spp. and P. aeruginosa when 1998 results were compared with those obtained in 1997. The overall rank order of activity of the six beta-lactams tested in 1998 versus all clinical isolates was imipenem (93.2% susceptible) > cefoperazone/sulbactam (84.1%) > cefepime (80.9%) > ceftazidime (70.7%) > aztreonam (65.7%) > cefotaxime (65.6%). In contrast, the rank order of these same agents tested against a similar collection of Colombian isolates in 1997 was imipenem (96.6% susceptible) > cefepime (93.6%) > cefoperazone/sulbactam (90.5%) > cefotaxime (74.9%) > aztreonam (74.3%) > ceftazidime (73.2%).

Pfaller M.A. et al. *Inducible amp C beta-lactamase producing gram-negative bacilli from blood stream infections: frequency, antimicrobial susceptibility, and molecular epidemiology in a national surveillance program (SCOPE).* Diagn Microbiol Infect Dis. 1997; 28(4) : 211-9.p Abstract: A surveillance study of nosocomial blood stream infections [Surveillance and Control of Pathogens of Epidemiologic Importance (SCOPE)] was conducted during a 14-month period in 1995 to 1996 in approximately 50 American medical centers. Among the 4725 blood stream infections, the etiologic agent was Enterobacter spp. in 230, Citrobacter freundii in 24, and Serratia marcescens in 65. The vast majority of these isolates (89%) had been sent to the University of Iowa including 198 Enterobacter spp. (46 Enterobacter aerogenes, 141 Enterobacter cloacae, 11 other Enterobacter spp.), 23 C. freundii, and 62 S. marcescens. Because these species are capable of producing Amp C beta-lactamase, we examined their susceptibility to 12 broad-spectrum antimicrobial agents. The frequency of resistance to ceftazidime and the molecular epidemiology of ceftazidime-resistant strains was also examined. Among the Enterobacter spp. and C. freundii isolates, resistance to third generation cephalosporins (ceftazidime, ceftriaxone) and broad-spectrum semisynthetic penicillins (piperacillin), with or without an enzyme inhibitor (piperacillin/tazobactam), was high, e.g., 35 to 50%. The S. marcescens isolates were quite susceptible to all agents tested. Both imipenem and cefepime were active against virtually all isolates tested including 84 stably derepressed Amp C-producing ceftazidime-resistant strains of Enterobacter spp. and C. freundii. The overall rank order of activity for the six best agents against these Amp C-producing strains was: imipenem (100% susceptible) > amikacin = cefepime (98.6%) > ciprofloxacin = gentamicin = ofloxacin (93.6 to 94.0%). Molecular typing studies of ceftazidime-resistant E. cloacae using an automated ribotyping system, as well as pulsed-field gel electrophoresis, indicated that although clonal spread of a single strain occurred in some of the medical centers, most of the episodes of bacteremia were caused by patient-unique strains. Control of these resistant organisms will require attention to microbiologic recognition of phenotypes, to infection control practices, and to limiting the overuse of certain extended spectrum beta-lactams.

Pfaller M.A. et al. *Multicenter evaluation of the antimicrobial activity for seven broad-spectrum beta-lactams in Turkey using the Etest method. Turkish Antimicrobial Resistance Study Group.* Diagn Microbiol Infect Dis. 1999; 35(1) : 65-73.p Abstract: From March through July 1997, a nine laboratory surveillance project was initiated in Turkey to monitor the potency and spectrum of seven broad-spectrum antimicrobial agents (cefepime, ceftazidime, cefotaxime, imipenem, aztreonam, cefoperazone/sulbactam, and ticarcillin/clavulanate) tested against approximately 100 organisms (average 82; range 70 to 95 isolates) per participant center (736 strains). Eleven groups of organisms were tested by the Etest method (AB BIODISK, Solna, Sweden) with results validated by concurrent quality control strain analysis. Results from all centers were tabulated and 91.1% of quality assurance tests were within ranges recommended by the National Committee for Clinical Laboratory Standards. Among the seven beta-lactam-class drugs tested, imipenem and cefepime were the most active beta-lactams tested against all isolates. Overall, the rank order of susceptibility of the seven agents was imipenem > cefepime > cefoperazone/sulbactam > ceftazidime > cefotaxime > aztreonam > ticarcillin/clavulanate. Both cefepime and imipenem were active against ceftazidime-resistant strains of Enterobacteriaceae as well as against Streptococcus spp. and oxacillin-susceptible Staphylococcus aureus. Resistance phenotypes consistent with extended spectrum beta-lactamases were documented among Escherichia coli and Klebsiella spp., and profiles consistent with stably derepressed Bush-Jacoby-Mederios group 1 (Amp C) cephalosporinases were common among Enterobacter spp., Citrobacter spp., and Serratia spp. These data should be used to guide empiric therapy with beta-lactams in Turkey, and additionally will provide a reference statistical baseline to which future national studies of drugs in this class can be compared.

Pfundstein J. et al. *A randomized trial of surgical antimicrobial prophylaxis with and without vancomycin in organ transplant patients.* Clin Transplant. 1999; 13(3) : 245-52.p Abstract: BACKGROUND: Gram-positive organisms, including vancomycin-resistant enterococci (VRE), have emerged as major pathogens on the organ transplant service at our institution. We hypothesized that our use of vancomycin as part of routine surgical prophylaxis increased the risk of VRE colonization and infection; conversely, there was concern that failure to use vancomycin prophylaxis would increase peri-operative morbidity

due to gram-positive organisms. METHODS: Renal transplant recipients (n = 88) were randomized to receive either a) vancomycin/ceftriaxone or b) cefazolin; and pancreas transplants (n = 24) to receive either a) vancomycin/gentamicin or b) cefazolin/gentamicin. Stool samples or rectal swabs were obtained for culture for enterococci within 24 h of transplantation and weekly while hospitalized. RESULTS: Enterococci were isolated on stool culture from 38 (34%) of 102 patients at the time of transplantation; 4 (11%) of the isolates were VRE. The percentage of patients who subsequently acquired VRE was low (1-7% per wk) but remained constant during hospitalization. There was no association between new VRE detection and vancomycin use for either prophylactic or therapeutic purposes. Forty-four patients (39%) had a post-operative infection with 46% of these infections due to gram-positive organisms; rates were unaffected by prophylactic vancomycin use. Pancreas transplant patients who did not receive vancomycin prophylaxis had a significantly longer initial hospitalization (p = 0.03); however, differences were not statistically significant when total length of stay (LOS) within the first 90 d of transplantation was compared. CONCLUSIONS: Vancomycin surgical prophylaxis does not appear to have an effect on VRE colonization or infection, or on rates of infection with gram-positive bacteria. Elimination of vancomycin prophylaxis in renal transplant patients may be a reasonable part of an overall program to limit vancomycin usage, although as a single measure, its impact may be minimal. Vancomycin surgical prophylaxis may be of greater importance in pancreas transplants.

Philippe E. et al. *Emergence of highly antibiotic-resistant Pseudomonas aeruginosa in relation to duration of empirical antipseudomonal antibiotic treatment*. Clin Perform Qual Health Care. 1999; 7(2) : 83-7.p Abstract: OBJECTIVE: This study examines antibiotic resistance in Pseudomonas aeruginosa in hospitalized patients in relation to prior empirical antibiotic therapy. DESIGN: Two retrospective case analyses comparing patients who manifested P aeruginosa with differing patterns of antibiotic resistance. SETTING AND PARTICIPANTS: Patients acquiring P aeruginosa in a community hospital. MEASURES: Patients were compared on duration of hospitalization and days and doses of antibiotics prior to recovery of P aeruginosa. Patients were grouped, based on susceptibility patterns of their P aeruginosa isolates classified as follows: (1) fully susceptible (susceptible to all classes of antipseudomonal antibiotics [SPA]), (2) multidrug-resistant (resistant to two classes of antipseudomonal antibiotics [MDRPA]), or (3) highly drug-resistant (resistant to > or = 6 classes of antipseudomonal antibiotics [HRPA]). To control for duration of hospitalization, antibiotic treatments of HRPA and SPA patients were compared during the first 21 days of care. RESULTS: Prior to recovery of HRPA, six HRPA patients received greater amounts of antibiotics, both antipseudomonal and non-antipseudomonal, than did six SPA patients prior to recovery of SPA. For 14 patients with hospital-acquired SPA who later manifested MDRPA, duration and dosage of antipseudomonal antibiotics, but not all antibiotics, were significantly higher for the SPA-to-MDRPA interval than for the preceding admission-to-SPA interval. The median duration of antipseudomonal antibiotic treatment prior to the recovery of P aeruginosa was 0 days for SPA, 11 days for MDRPA, and 24 days for HRPA. CONCLUSION: Duration of empirical antipseudomonal antibiotic treatment influences selection of resistant strains of P aeruginosa; the longer the duration, the broader the pattern of resistance.

Philippon A. et al. *[Azithromycin: critical points].* Pathol Biol (Paris). 1995; 43(6) : 488-97.p Abstract: The determination of the French breakpoints (< or = c, > C) were selected by the use of different criteria including bacteriological, pharmacokinetic and obviously clinical criteria. Concerning the bacteriological results, azithromycin, being an acid stable orally administered antimicrobial drug, is in vitro marginally less active than erythromycin against Gram-positive organisms including beta-haemolytic streptococci and Staphylococcus aureus. But in contrast, this azalide is more active than erytromycin against many Gram-negative pathogens, notably Neisseria gonorrhoeae, H. influenzae, Branhamella (Moraxella) catarrhalis, Ureaplasma urealyticum, and Borrelia burgdorferi. The activity of azithromycin is unaffected by the inoculum, unlike of pH, serum, and presence of CO2 for anaerobes. However, erythromycin-resistant micro-organisms are also resistant to azithromycin. Considering the pharmacokinetic criteria and the clinical results such as infections of the lower and upper respiratory tracts, skin and soft tissues, uncomplicated urethritis/cervicitis associated with N. gonorrhoeae, Chlamydia trachomatis or U. urealyticum, the preliminary breakpoints of azithromycin are defined by the following concentrations (< or = 0.12 and > 4 mg/l). Additional experimental and clinical results are required to confirm the in vitro activity against some other bacterial species (E. faecalis, L. monocytogenes, Brucella, P. multocida, or even Salmonella and Shigella).

Phillips E. et al. *Cost-effectiveness analysis of six strategies for cardiovascular surgery prophylaxis in patients labeled penicillin allergic.* Am J Health Syst Pharm. 2000; 57(4) : 339-45.p Abstract: The cost-effectiveness of different approaches to antimicrobial prophylaxis for cardiovascular surgery patients labeled penicillin allergic was studied. A decision-analytic model was used to examine the cost-effectiveness of six strategies for antimicrobial prophylaxis in cardiovascular surgery patients at a tertiary care hospital. The strategies consisted of (1) giving vancomycin to all patients labeled penicillin allergic, (2) giving cefazolin to all patients labeled penicillin allergic, (3) giving vancomycin to all patients with a history suggesting an immunoglobulin E (IgE)-mediated reaction to penicillin and cefazolin to patients without such a history, (4) administering a penicillin skin test to patients with a history suggesting an IgE-mediated reaction to penicillin and giving vancomycin to patients with positive results and cefazolin to all others, (5) skin testing all patients labeled penicillin allergic and giving vancomycin to those with positive results and cefazolin to those with negative results, regardless of history, and (6) skin testing all patients and giving vancomycin to those with positive results or a history suggesting an IgE-mediated reaction to penicillin and cefazolin to all others. Giving cefazolin to all patients labeled penicillin allergic was the least expensive strategy but was associated with the highest rate of both anaphylactic and non-life-threatening serious reactions. Selective use of vancomycin in patients with a history suggesting an IgE-mediated reaction to penicillin was associated with an added cost and a slightly lower rate of anaphylaxis. Although skin-testing strategies may decrease both non-life-threatening and anaphylactic reactions, the incremental cost was high. When vancomycin was given to all patients labeled penicillin allergic, the incremental cost was very high. A decision-analytic model indicated that selective use of vancomycin is more cost-effective than indiscriminate use of vancomycin for surgical prophylaxis in cardiovascular surgery patients labeled penicillin allergic.

Phillips J.R. et al. *Prevalence of Candida species in hospital-acquired urinary tract infections in a neonatal intensive care unit*. Pediatr Infect Dis J. 1997; 16(2) : 190-4.p Abstract: OBJECTIVE: To determine the prevalence and clinical features of Candida species in hospital-acquired urinary tract infections (UTI) in a neonatal intensive care unit. DESIGN: A retrospective study was conducted of hospital-acquired UTI occurring in infants admitted to a neonatal intensive care unit between January 1, 1989, and June 30, 1995. Hospital-acquired infection was defined as one occurring in an infant who was at least 7 days of age and hospitalized since birth. Urinary tract infection was defined by a urine culture yielding a single organism with > 1000 colony-forming units/ml from a suprapubic aspiration or > 10,000 colony-forming units/ml via urethral catheterization. RESULTS: Fifty-seven infants had 60 UTI during the study period. Candida spp. were responsible for 25 of 60 (42%) UTI. The median gestational age of infants with candidal UTI was 26 weeks (range, 23 to 37) which was significantly less than that for infants with bacterial UTI, 28 weeks (range, 23 to 40) (P = 0.04). Candidemia was present in 13 of 25 (52%) candidal UTI which was significantly more

often than bacteremia with bacterial UTI, 3 of 35 (8%) (odds ratio, 11.6; 95% confidence interval, 2.8 to 47.8). The median age of infection for candidal UTI was 34 days (range, 9 to 228), which was significantly earlier than for bacterial UTI, 79 days (range, 7 to 247) (P = 0.003). Renal pelvis fungus balls were present in 7 of 20 (35%) infants with candidal UTI who had renal ultrasound studies. CONCLUSIONS: Candida spp. were the pathogens identified in 42% of hospital-acquired urinary tract infections in a neonatal intensive care unit. Candidemia was associated with 52% of candidal UTI and bacteremia with 8% of bacterial UTI. Candidal UTI occurred significantly earlier than bacterial UTI. Renal fungus balls were present in 35% of infants with candidal UTI.

Pichichero M.E. *Empiric antibiotic selection criteria for respiratory infections in pediatric practice.* Pediatr Infect Dis J. 1997; 16(3 Suppl) : S60-4.p Abstract: BACKGROUND: Respiratory infections in children may occur as a consequence of resistant bacterial pathogens. Streptococcus pneumoniae organisms resistant to penicillin, trimethoprim/sulfamethoxazole and macrolides are increasingly prevalent. Amoxicillin- and macrolide-resistant Haemophilus influenzae and Moraxella (Branhamella) catarrhalis are also more commonly seen. Traditional agents such as amoxicillin and trimethoprim/sulfamethoxazole remain acceptable choices for most children with respiratory infections because currently most patients are not infected by resistant pathogens and there is a high spontaneous cure rate associated with these infections. OBJECTIVE: To analyze the criteria for the selection of extended spectrum antimicrobials as empiric therapy for respiratory infections. DISCUSSION: When an extended spectrum antimicrobial is appropriate for empiric therapy, selection should be based on: (1) efficacy; (2) adverse event profile; and (3) compliance-enhancing features (dosing with meals, once or twice daily administration, good palatability in suspension, shortened course of therapy and affordability). A new agent, ceftibuten, has recently joined other extended spectrum cephalosporins and newer macrolides (clarithromycin and azithromycin) as a choice to be considered for empiric therapy for respiratory infections. These antimicrobials are differentiated from each other and traditional agents by differences in activity in vitro against penicillin-resistant pneumococci, relative beta-lactamase stability against Gram-negative bacteria and pharmacodynamic properties. When resistant organisms are isolated or suspected in community-acquired respiratory infections, cautious use of newer antibiotics may have to be considered.

Pichichero M.E. et al. *Controversies in the medical management of persistent and recurrent acute otitis media. Recommendations of a clinical advisory committee.* Ann Otol Rhinol Laryngol Suppl. 2000; 183 : 1-12.p Abstract: Streptococcus pneumoniae is the predominant bacterial pathogen associated with acute otitis media (AOM), causing an estimated 7 million cases annually in the United States. Bacterial resistance should be considered when selecting an antimicrobial agent for otitis media. Significant increases in drug-resistant S pneumoniae are documented worldwide, and less than 50% of S pneumoniae strains are fully susceptible to penicillin in some regions of the United States. Although amoxicillin is recommended for uncomplicated AOM, treatment guidelines should be flexible and adaptable, taking into consideration local and regional susceptibility patterns, the age of the patient, the frequency of prior infections, and the response to prior therapy. Resistant organisms are more prevalent in children younger than 2 years of age and in those who have recurrent or persistent AOM. Overdiagnosing AOM, selecting inappropriate empiric therapy, or both, leads to overuse and misuse of antibiotics and causes increased drug resistance. This article reviews persistent and recurrent AOM and discusses the pitfalls of diagnosis and the practical limitations of current treatment recommendations.

Pichichero M.E. et al. *Tratamento de otite média aguda persistente e recorrente com o cefprozil.* Folha méd. 1998; 116(1) : 49-56.p Abstract: Objetivo: Identificamos os patógenos causadores de otite média aguda persistente e recorrente (OMA) e a eficácia clínica do cefprozil como tratamento. Modelo do estudo: Este foi um ensaio nao comparativo, aberto e multicêntrico. Crianças com idade entre seis meses a 12 anos de idade, que apresentavam sinais e sintomas de OMA e evidências de efusao no ouvido médio confirmadas por otoscopia pneumática ou timpanometria, foram submetidas … timpanocentese e ao tratamento subseq_ente com o cefprozil (15 mg/Kg duas vezes ao dia) durante 10 dias. O estudo buscou recrutar particularmente os pacientes com otite média recorrente ou aqueles que nao responderam … antibioticoterapia ou profilaxia prévias. Resultados: Duzentos e sessenta e duas (99 por cento) das 265 crianças arroladas foram consideradas passíveis de avaliaçao. A idade mediana do grupo de estudo foi de um ano. Noventa e oito (37 por cento) crianças apresentavam histórico de uso prévio de antibióticos (durante um período de 30 dias). Noventa e sete (37 por cento) preencheram nossos critérios de definiçao de OMA recorrente, 48 (18 por cento), de OMA persistente e 132 (50 por cento) crianças apresentaram três ou mais episódios anteriores de otite média aguda nos 12 meses que antecederam o estudo. Oitenta e duas (31 por cento) timpanocenteses na ocasiao da inclusao nao mostraram crescimento de microorganismos, 150 (57 por cento) evidenciaram um único patógeno bacteriano e 29 (11 por cento), múltiplos patógenos bacterianos. Dos 93 isolados de Streptococcus pneumoniae no pré-tratamento, 50 (54 por cento) eram sensíveis … penicilina, 12 (13 por cento) apresentavam resistência intermediária … penicilina e 31 (33 por cento) eram resistentes a este antibiótico. Dos 75 isolados de Haemophilus influenzae no pré-tratamento, 42 (56 por cento) produziram betalactamase, bem como quatro (27 por cento) das 15 cepas de Moraxella catarrhalis. Encontrou-se resposta clínica satisfatória por patógeno em 75 por cento (70 entre 93) com S. pneumoniae, 75 por cento (56 de 75) com H. influenzae e 93 por cento (13 de 14) com M. catarrhalis; a resposta das infecçoes causadas por um único patógeno foi maior do que as de múltiplos patógenos (118 de 150 [78 por cento) e 17 de 29 [59 por cento], respectivamente; P=0,03). A resposta dos pacientes com isolados de S. pneumoniae sensíveis com resistência intermediária ou resistentes … penicilina foi...(AU).

Piddock L.J. et al. *Activities of new fluoroquinolones against fluoroquinolone-resistant pathogens of the lower respiratory tract.* Antimicrob Agents Chemother. 1998; 42(11) : 2956-60.p Abstract: The activities of six new fluoroquinolones (moxifloxacin, grepafloxacin, gatifloxacin, trovafloxacin, clinafloxacin, and levofloxacin) compared with those of sparfloxacin and ciprofloxacin with or without reserpine (20 microg/ml) were determined for 19 Streptococcus pneumoniae isolates, 5 Haemophilus sp. isolates, and 10 Pseudomonas aeruginosa isolates with decreased susceptibility to ciprofloxacin from patients with clinically confirmed lower respiratory tract infections. Based upon the MICs at which 50% of isolates were inhibited (MIC50s) and MIC90s, the most active agent was clinafloxacin, followed by (in order of decreasing activity) trovafloxacin, moxifloxacin, gatifloxacin, sparfloxacin, and grepafloxacin. Except for clinafloxacin (and gatifloxacin and trovafloxacin for H. influenzae), none of the new agents had improved activities compared with that of ciprofloxacin for P. aeruginosa and H. influenzae. A variable reserpine effect was observed for ciprofloxacin and S. pneumoniae; however, for 9 of 19 (47%) isolates the MIC of ciprofloxacin was decreased by at least fourfold, suggesting the presence of an efflux pump contributing to the resistance phenotype. The laboratory parC (Ser79) mutant strain of S. pneumoniae required eightfold more ciprofloxacin for inhibition than the wild-type strain, but there was no change in the MIC of sparfloxacin and only a 1-dilution increase in the MICs of the other agents. For efflux pump mutant S. pneumoniae the activities of all the newer agents, except for levofloxacin, were reduced. Except for clinafloxacin, all second-step laboratory mutants required at least 2 microg of all fluoroquinolones per ml for inhibition.

Piddock L.J. et al. *Activity of antibiotics used in human medicine for Campylobacter jejuni isolated from farm animals and their environment in Lancashire, UK.* J Antimicrob Chemother. 2000; 46(2) : 303-6.p

Abstract: A retrospective study of 96 Campylobacter jejuni isolated from farm animals and the environment showed that most were less susceptible than the NCTC type strain to nalidixic acid (MICs 4-32 mg/L), ciprofloxacin (MICs 1-2 mg/L) and erythromycin (MICs 16-64 mg/L), but had similar susceptibility to tetracycline (MICs 4-8 mg/L) and kanamycin (MICs 4-8 mg/L). None had the high MICs of ciprofloxacin (>32 mg/L) or erythromycin (1024 mg/L) typically associated with clinical resistance in this species. Some farms used antimicrobial agents, but there was no obvious association between the use of agents and the susceptibility of the isolates.

Pienihakkinen K. et al. *Comparison of the efficacy of 40% chlorhexidine varnish and 1% chlorhexidine-fluoride gel in decreasing the level of salivary mutans streptococci*. Caries Res. 1995; 29(1) : 62-7.p Abstract: The aim of the study was to compare the efficacy of a 40% chlorhexidine (CHX) varnish (EC40, Certichem, Nijmegen, The Netherlands) with a 1% CHX-0.2% NaF gel in decreasing the level of salivary mutans streptococci (MS). The subjects were screened for a high level of MS using a Dentocult-SM strip method (Orion Diagnostica, Finland). In varnish groups with fluoride (VCHXF, n = 20) and without fluoride (VCHX, n = 19), the CHX varnish was applied on dry teeth using an ampoule and an anesthetic syringe with blunt needle, and removed after 15 min. In group VCHXF an additional 2.26% fluoride varnish (Duraphat, Woelm Pharma GmbH, Eschwege, Germany) was applied. The CHX-NaF gel treatment included the application of the gel with rubber cups and dental tape for 5 min on three occasions during a week in group GCHXF (n = 21). The level of MS (MSB agar) was significantly lower after 4 weeks than at baseline in VCHX ($p < 0.001$) and VCHXF ($p < 0.05$), but not after 12 weeks. In GCHXF a significant decrease ($p = 0.001$) was observed after 4 weeks only with the strip method. In VCHX and VCHXF the strip values for MS were still reduced after 12 weeks. In VCHX and GCHXF a small, although statistically significant, increase was observed in the total number of microorganisms after 4 and 12 weeks. Opinions on taste sensations associated with the treatments were generally negative, but least negative in the VCHXF group; fewer side effects were also reported in the VCHXF group.(ABSTRACT TRUNCATED AT 250 WORDS).

Pierard D. et al. *Use of the E-test for determining antimicrobial susceptibility of anaerobic bacteria*. Pathol Biol (Paris). 1996; 44(5) : 358-62.p Abstract: Routine determination of antimicrobial susceptibility of anaerobic clinical isolates is difficult. The E-test is a practical alternative technique that we evaluated while testing clinical isolates in a multicenter study. The susceptibility to 9 antibiotics (penicillin, amoxycillin/clavulanate, ticarcillin/clavulanate, piperacillin/tazobactam, imipenem, cefoxitin, metronidazole, clindamycin, chloramphenicol) of 351 strains belonging to 63 different species was determined by the NCCLS reference agar dilution procedure using Wilkins-Chalgren agar medium with 5% sheep blood and was compared to the E-test performed on the same medium and using manufacturer's recommendations. The MIC values obtained with the E-test were generally one dilution lower than those obtained with the reference technique, 87.1% of the results being within two dilutions. In terms of susceptibility categories, 95.1% agreement was observed with 3.8% minor errors and only 0.5% major and 0.6% very major errors. With some Fusobacterium spp. and Clostridium spp. strains, the E-test was difficult to read or not interpretable because of the presence of growth within the inhibition zone of all beta-lactam antibiotics, representing a trailing phenomenon. We conclude that, if some interpretation difficulties are taken into account, the E-test is a convenient and reliable technique that can be applied in all clinical laboratories. It could be used for the individual testing of important anaerobes in certain clinical situations but cannot yet be considered as a reference technique. Its utility is emphasised by the increased resistance rate against clindamycin and the appearance of a few strains in the B. fragilis group with a reduced susceptibility against metronidazole.

Pieras Ayala E. et al. *[Bacteriologic assessment of the lower urinary tract and genital area in patients with recurrent urinary tract infections]*. Arch Esp Urol. 2000; 53(4) : 313-20.p Abstract: OBJECTIVE: The pathogens responsible for urinary infection originate from the digestive tract prior passage through the genital region. Samples were obtained from this region in an attempt to identify women with these pathogens. We have analyzed the most frequently colonized areas of the genital region in order to develop a method for obtaining samples. Risk factors were evaluated by determining the relationship of the samples with factors implicated in the pathogenesis of recurrent infection. METHODS: Samples were obtained from 146 women of all ages that consulted for recurrent urinary tract infection. The samples from the genital region (perimeatal vulva, vagina, urethral and intraurethral meatus) and urine obtained through a catheter were cultured. RESULTS: The overall incidence of positive samples was 41%; 23% of the patients showed urinary infection (urine obtained by catheterization) at the time the samples were taken. The vaginal samples were the most frequently colonized and the intraurethral samples were the most sensitive when compared with the urinary samples. The sensitivity, specificity, positive and negative predictive values of these two samples were the same as those of the other samples together. In regard to colonization, a difference was found only between menopausal and premenopausal women, and in proportion to the duration of the history of infection. CONCLUSIONS: The study shows that it is unnecessary to obtain various samples; vaginal and intraurethral smears are sufficient. Menopausal women who referred two symptomatic episodes a year were found to be at a higher risk for vaginal infection, and in proportion to the number of years they have had recurrent infection.

Pieroni P. et al. *Antimicrobial susceptibilities of blood culture isolates obtained before and after the introduction of ciprofloxacin*. J Antimicrob Chemother. 1997; 39(3) : 419-22.p Abstract: The in-vitro susceptibilities of 1658 blood culture isolates to ciprofloxacin and 13 other antimicrobial agents were determined, and compared with the results for isolates obtained before and after the availability of ciprofloxacin in 1989. Only six (0.6%) of 995 Enterobacteriaceae were resistant to the fluoroquinolones tested; all of the ciprofloxacin-resistant strains were isolated after 1989 ($P = 0.04$). No significant increase in ciprofloxacin resistance was found in Pseudomonas aeruginosa or Acinetobacter spp. No resistance to ciprofloxacin was found in 124 Staphylococcus aureus isolates prior to 1989, but five (2.4%) of 208 S. aureus strains recovered after 1989 were ciprofloxacin-resistant ($P = 0.16$). Rates of resistance to ciprofloxacin and other antimicrobial agents commonly used to treat bacteraemic infections have remained relatively low in this Canadian teaching hospital over the past 16 years.

Pierro A. et al. *Microbial translocation in neonates and infants receiving long-term parenteral nutrition*. Arch Surg. 1996; 131(2) : 176-9.p Abstract: OBJECTIVE: To explore whether episodes of endogenous septicemias due to microbial translocation are clinically relevant in neonates and infants who are receiving long-term parenteral nutrition (PN). DESIGN: Prospective observational cohort study of 2 years. SETTING: Neonates and infants who underwent surgical procedures and required PN because of gastrointestinal abnormalities. MEASUREMENTS: Surveillance cultures of the oropharynx and gut were obtained at the first of PN and thereafter twice each week. These cultures were processed for all microorganisms, except for coagulase-negative staphylococci, in a semiquantitative manner to detect overgrowth. A blood sample was taken for culture from both the central venous line and peripheral vein on clinical indication only. Microbial translocation was diagnosed when the microorganisms that were isolated from the blood sample were also carried in the throat and/or rectum within the 2 weeks preceding the episode of septicemia. MAIN RESULTS: Of 94 infants, 10 (11%) experienced 24 episodes of septicemia (ie, 7.3 septicemic episodes per 1000 days of PN). Six infants experienced 15 episodes of microbial translocation due to enteric microorganisms, including

Escherichia coli, Klebsiella, Candida species, and enterococci. Microbial translocation occurred after a median of 58 days of PN (range, 32 to 286 days). The enteric organisms that caused septicemia were always present in the throat and/or rectum and in high concentrations (> 10(5) colony-forming units per gram [ie, overgrowth]) in 60% of the translocation episodes. All but one episode occurred in infants with an abnormal serum bilirubin level (> 17 mumol/L [0.99 mg/dl]). CONCLUSIONS: In neonates and infants who are receiving PN, septicemia may be a gut-related phenomenon.

Pigrau C. et al. *Bacteremia due to Campylobacter species: clinical findings and antimicrobial susceptibility patterns.* Clin Infect Dis. 1997; 25(6) : 1414-20.p Abstract: From 1979 to 1996, 58 patients (mean age, 39.4 years) were treated for bacteremia due to Campylobacter species at the Hospitals Vall d'Hebron in Barcelona, Spain. Bacteremia was considered to be hospital acquired in 30% of these patients. Almost all the patients (93%) had underlying conditions; liver cirrhosis was the most frequent (34% of patients), and neoplasia, immunosuppressive therapy, and human immunodeficiency virus disease were also common. Of the 58 Campylobacter strains isolated, 81% were C. jejuni, 10% were Campylobacter species, 7% were C. fetus, and one (2%) was C. coli. Resistance rates were: cephalothin, 82%; co-trimoxazole, 79%; quinolones, 54%; ampicillin, 20%; amoxicillin/clavulanate, 4%; erythromycin, 7%; gentamicin, 0; and tetracyclines, 0. Even though the majority of patients were immunocompromised, mortality was low (10.5%), and only one patient relapsed. Because of the high level of resistance to the quinolones in Campylobacter species, these drugs should not be used as empirical treatment, at least in Spain. Although the macrolides remain the antibiotics of choice, amoxicillin/clavulanate may be an effective alternative therapy.

Pikis A. et al. *Penicillin-resistant pneumococci from pediatric patients in the Washington, DC, area.* Arch Pediatr Adolesc Med. 1995; 149(1) : 30-5.p Abstract: OBJECTIVE: To assess the prevalence and antimicrobial susceptibility of penicillin-resistant pneumococci (PRP) isolated from patients in a pediatric hospital. METHODS: All (108) isolates of Streptococcus pneumoniae recovered from usually sterile body sites between June 1, 1992, and May 31, 1993, were screened for susceptibility to penicillin by the E-test method. Minimum inhibitory concentrations of penicillin and other antibiotics were also determined by an agar dilution method for 10 PRP and 22 penicillin-susceptible strains. RESULTS: Fourteen isolates (12.9%) were PRP by the E-test; nine of these (8.3%) were intermediately resistant and five (4.6%) were highly resistant. All strains were sensitive to rifampin and vancomycin. Increased frequency of resistance to oral and parenteral cephalosporins and carbapenems was found among PRP; for most of these antibiotics, resistance exceeded 40% of the PRP. In addition, 20% of the PRP were resistant to macrolides and all penicillin-susceptible and PRP were resistant to a combination of trimethoprim and sulfamethoxazole. CONCLUSIONS: The decreased susceptibility to oral and parenteral cephalosporins, macrolides, a combination of trimethoprim and sulfamethoxazole, and carbapenems creates a significant problem in the treatment of pneumococcal infections in both ambulatory and hospitalized patients.

Pillai S.P. et al. *Effects of antimutagens on development of drug/antibiotic resistance in microorganisms.* Mutat Res. 1998; 402(1-2) : 139-50.p Abstract: The effects of polyamines and related compounds on the development of drug/antibiotic resistance in a variety of bacterial strains were studied. Methods employed included standard toxicity assays, modified Ames tests for mutation frequencies and antimutagenic effects, prophage induction assays, and recA-lacZ and ada-lacZ induction assays. Using these methods, we have shown that the polyamines produce strong antimutagenic effects against EMS and MMS-induced antibiotic resistance. Spermidine also seems to have antimutagenic potential against 4NQO-induced mutations. DNA fidelity assays suggest that polyamines play a vital role in DNA synthesis, and several polyamines prevent the development of resistance to dihydrostreptomycin. The polyamine putrescine appears to be required for streptomycin action and also enhances the activity of some antibiotics (e.g., neomycin, kanamycin) but shows no enhancing effect on tetracycline or erythromycin. The potential significance of these studies for infectious diseases and tumor therapy is discussed.

Pillay T. et al. *Piperacillin/tazobactam in the treatment of Klebsiella pneumoniae infections in neonates.* Am J Perinatol. 1998; 15(1) : 47-51.p Abstract: Nosocomial Klebsiella pneumoniae infection is associated with a high mortality in neonates and antimicrobial therapy of these infections has been complicated by the emergence of multiresistant strains. These organisms remain susceptible to only a few antimicrobial agents, and some of these are not recommended for use in children. In this study the antimicrobial agents used in the treatment of 33 neonates with Klebsiella pneumoniae (K. pneumonia) infection in our tertiary neonatal unit, during an outbreak were: piperacillin/tazobactam (13), imipenem/cilastatin (17), cefotaxime (2), and ciprofloxacin (1). Extended-spectrum beta-lactamase production was detected in K. pneumoniae isolates from 18 of 33 (54.5%) neonates. All-cause mortality was 13 of 33 (39.4%) and there was no significant difference in mortality between neonates treated with imipenem/cilastatin (6 of 17 or 35.3%) and neonates treated with piperacillin/tazobactam (6 of 13 or 46.2%). The duration of antimicrobial therapy and total hospital stay was similar between neonates who received imipenem/cilastatin and those that received piperacillin/tazobactam. This report suggests that piperacillin/tazobactam may be a useful antimicrobial agent in neonatal infections caused by beta-lactamase-producing organisms.

Pilloni A.P. et al. *The in vitro effects of cetyltrimethylammonium naproxenate on oral and pharyngeal microorganisms of various ecological niches.* J Periodontal Res. 1999; 34(8) : 473-7.p Abstract: The purpose of this study was to determine the in vitro susceptibility to cetyltrimethylammonium naproxenate for various aerobic and anaerobic micro-organisms responsible for oral and pharyngeal diseases by assessing the minimum inhibitory concentrations (MICs) and minimum bactericidal concentrations (MBCs) or minimum fungicidal concentrations (MFCs) and by determining kill-times. The MICs of cetyltrimethylammonium naproxenate for 46 tested strains (25 reference strains and 21 clinical isolates) ranged from 8 to 500 micrograms/ml. The MIC was found to be 31.25 micrograms/ml for 36% of the reference strains. Even lower MIC values (15.63 micrograms/ml) were observed for some anaerobic strains, for Haemophilus influenzae and for Candida tropicalis. MIC and MBC values corresponded for the majority of strains tested while the MFC for C. tropicalis and C. albicans was much higher. Only 9.5% of the clinical isolates gave a MIC value of 31.25 micrograms/ml. Enterococcus faecalis, Streptococcus pyogenes and Staphylococcus aureus showed MIC at 62.5 micrograms/ml. The MIC and MBC values among the isolates were comparable, while the MFC value for the yeasts was greater. A concentration of 125 micrograms/ml of cetyltrimethylammonium naproxenate inhibited the growth of all bacteria, except Enterobacteriaceae and Pseudomonaceae, and yeasts. Cetyltrimethylammonium naproxenate shows very rapid kill-time for S. sanguis (0''), and rapid (15'') for S. pyogenes, S. dysgalactiae and S. mutans and for Moraxella catarrhalis, while a longer kill-time was necessary for the other microbes tested.

Pineau L. et al. *Automatic washer disinfector for flexible endoscopes: a new evaluation process.* Endoscopy. 1997; 29(5) : 372-9.p Abstract: BACKGROUND AND STUDY AIMS: Many automatic washer disinfectors for flexible endoscopes have been marketed and offered as an alternative method of preventing infections, but they are frequently unsatisfactory. There is therefore clearly a need to test prototypes prior to marketing, following an evaluation process that is sufficiently reliable and rigorous to guarantee the efficacy of the decontami-

nation processes. MATERIALS AND METHODS: The present study describes an experimental method based on the follow-up of the decontamination of a Tygon tube, the internal surface of which was contaminated by a bacterial biofilm. This method is proposed as a preliminary test for evaluating washer disinfectors. RESULTS: An analysis of the results obtained after technical modifications of the first prototype of the Fibro-Cleaner showed that complementary activities of each successive cycle phase allow a reduction in the number of adherent bacteria of more than 8 log per cm2 of support. With the three different biofilms tested (Escherichia coli, Pseudomonas aeruginosa mucoid and Staphylococcus aureus), no microorganisms were recovered from the support at the end of the decontamination process. CONCLUSIONS: The experimental protocol suggested here seems to be well suited for assessing washer disinfectors during the development phase of the prototype, as well as for comparative studies.

Pinto B. et al. *Characterization of 'faecal streptococci' as indicators of faecal pollution and distribution in the environment.* Lett Appl Microbiol. 1999; 29(4) : 258-63.p Abstract: The recent revision of the taxonomy of 'faecal streptococci' prompted us to verify the importance of identifying the species of this group of cocci. During a study carried out to assess the hygienic quality of environmental samples from a variety of sources, we isolated 198 strains named faecal streptococci on the basis of conventional international tests (EVA broth multiple tube test) used for Public Health purposes. The predominant species were Enterococcus faecalis (39%) and Ent. faecium (29%), followed by Ent. durans/hirae, Ent. casseliflavus/gallinarum, Ent. raffinosus, with a different prevalence of the species depending on the source. Eighty-four per cent of isolates were true faecal species. Only one isolate was identified as belonging to the Streptococcus genus. The authors stress the opportunity to identify the species. This may help to clarify the ecological and epidemiological characteristics of intestinal enterococci and streptococci in the environment, in drinking and recreational waters and their meaning as indicators of faecal pollution. All isolates were tested for their susceptibility to some antimicrobial agents widely used in medical therapy and the pattern was compared with the pattern of isolates from clinical specimens.

Piper K.E. et al. *Trovafloxacin treatment of viridans group Streptococcus experimental endocarditis.* Antimicrob Agents Chemother. 2000; 44(9) : 2554-6.p Abstract: The activity of trovafloxacin was compared with those of vancomycin and penicillin in a model of Streptococcus sanguis species group (trovafloxacin MIC, 0.125 microg/ml) and Streptococcus mitis species group (trovafloxacin MIC, 0.125 &mgr;g/ml) experimental endocarditis. Rabbits with catheter-induced aortic valve vegetations were given no treatment, trovafloxacin at 15 mg/kg of body weight three times a day (t.i.d.), vancomycin at 15 mg/kg twice a day, or penicillin at 1.2 x 10(6) IU t.i.d. After 3 days of treatment, the animals were sacrificed; cardiac valve vegetations were aseptically removed and cultured quantitatively. Penicillin was as active as vancomycin as measured by in vivo clearance of bacteria. Trovafloxacin was less active ($P < 0.05$) than vancomycin or penicillin against S. sanguis species group infection but had similar efficacy against S. mitis species group infection. Quinolones, despite MICs in the susceptible range, may not be active for serious infections caused by some viridans group streptococci.

Pipkin W. et al. *Early experience with infectious complications of percutaneous femoral artery closure devices.* J Vasc Surg. 2000; 32(1) : 205-8.p Abstract: Percutaneous femoral artery closure devices are being used routinely after cardiac catheterizations. The use of these devices has been advocated to decrease length of stay, promote early ambulation, and prevent bleeding. We reviewed the use of these devices in our institution and report three cases of infectious complications (two pseudoaneurysms and one infected hematoma). Reports of infected pseudoaneurysms after cardiac catheterization before the implementation of these devices are rare. The use of these devices may be associated with an increased incidence of infected femoral pseudoaneurysms.

Pirnazar P. et al. *Bacteriostatic effects of hyaluronic acid.* J Periodontol. 1999; 70(4) : 370-4.p Abstract: BACKGROUND: This investigation is one of a series of projects seeking to ascertain whether hyaluronic acid (HA) is therapeutically effective in tissue regeneration procedures. The rationale for these investigations is to test the hypothesis that HA can serve as a bioabsorbable carrier for other substrates as well as itself actively promote the regeneration of tissue. METHODS: In this paper, we report on the bacteriostatic and bactericidal properties of 3 molecular weight formulations of recombinant HA (low, 141 kD; medium, 757 kD; and high, 1,300 kD) on selected oral and non-oral microorganisms in the planktonic phase. Three concentrations of each HA formulation were screened, 0.5, 1.0, and 2.0 mg/ml, using a standard broth culture assay. RESULTS: Recombinant HA exerted varied bacteriostatic effects on all the bacterial strains tested depending on its molecular weight (MW) and concentration. The high concentrations of the medium MW HA had the greatest bacteriostatic effect, particularly on the Actinobacillus actinomycetemcomitans, Prevotella oris, Staphylococcus aureus, and Propionibacterium acnes strains. The 1.0 mg/ml concentration of high MW HA had the greatest overall bacteriostatic effect, inhibiting the growth of all 6 bacterial strains tested. Among the bacterial strains studied, HA was found to have no bactericidal effects, regardless of concentration or molecular weight. CONCLUSIONS: The results of this study suggest that HA in the MW range of 1,300 kD may prove beneficial in minimizing bacterial contamination of surgical wounds when used in guided tissue regeneration surgery.

Pistelli L. et al. *Antimicrobial activity of crude extracts and pure compounds of Hypericum hircinum.* Fitoterapia. 2000; 71 Suppl 1 : S138-S140.p Abstract: The antimicrobial activity of the n-hexane (H) and chloroform (C) extracts, the methanol extract (M) and its ethyl acetate (E) and n-butanol (B) fractions, and six isolated constituents of the aerial parts of Hypericum hircinum was investigated using an agar diffusion method. The maximum activity was exhibited by the methanolic extract against Staphylococcus aureus, while all pure constituents showed no antimicrobial activity against the tested microorganisms.

Pitman C. et al. *Bloody diarrhoea of adults in Malawi: clinical features, infectious agents, and antimicrobial sensitivities.* Trans R Soc Trop Med Hyg. 1996; 90(3) : 284-7.p Abstract: In a prospective study, 132 hospital out-patients presenting with bloody diarrhoea ('cases') were evaluated in Malawi, Central Africa; 73 out-patient tuberculosis suspects acted as controls. Most (100/132, 76%) subjects reported an illness lasting < or = 5 d with > 5 bowel actions in the preceding 12 h; 39/132 (30%) reported use of systemic antimicrobial drugs in the preceding week; 57% (74/130) had a body mass index < 20; 4% (5/131) were febrile; and 18/130 (13%) had one or more sign(s) of dehydration. The 73 controls reported no diarrhoea and more systemic antimicrobial drug use ($P = 0.0003$), but were otherwise comparable to the subjects. All stool samples from controls and 38/124 (31%) from cases were macroscopically normal. Only 32% (40/124) of the cases had blood visible in the stool. Parasitic gut infections were found in 42/124 (34%) cases compared with 1/60 (2%) controls ($P < 0.0001$). The commonest parasite was Schistosoma mansoni. Bacterial cultures were positive in 32/124 (26%) of the subjects. Shigella dysenteriae (Sd) 1 accounted for 53% (17/32) of these. All bacterial isolates were sensitive in vitro to nalidixic acid and ciprofloxacin, while only 18% were sensitive to cotrimoxazole. Sd 1 with significant antimicrobial resistance continues to cause seasonal epidemics of dysentery in Malawi. During these, approximately two-thirds of patients presenting with bloody diarrhoea have no blood visible in the stool. Nalidixic acid remains the drug of choice but its use should be restricted to patients at greatest risk of complicated shigellosis.

Pitout J.D. et al. *beta-Lactamases responsible for resistance to expanded-spectrum cephalosporins in Klebsiella pneumoniae, Escherichia coli, and Proteus mirabilis isolates recovered in South Africa*. Antimicrob Agents Chemother. 1998; 42(6) : 1350-4.p Abstract: Although resistance to the expanded-spectrum cephalosporins among members of the family Enterobacteriaceae lacking inducible beta-lactamases occurs virtually worldwide, little is known about this problem among isolates recovered in South Africa. Isolates of Klebsiella pneumoniae, Escherichia coli, and Proteus mirabilis resistant to expanded-spectrum cephalosporins recovered from patients in various parts of South Africa over a 3-month period were investigated for extended-spectrum beta-lactamase production. Antibiotic susceptibility was determined by standard disk diffusion and agar dilution procedures. Production of extended-spectrum beta-lactamases was evaluated by using the double-disk test, and the beta-lactamases were characterized by spectrophotometric hydrolysis assays and an isoelectric focusing overlay technique which simultaneously determined isoelectric points and general substrate or inhibitor characteristics. DNA amplification and sequencing were performed to confirm the identities of these enzymes. The P. mirabilis and E. coli isolates were found to produce TEM-26-type, SHV-2, and SHV-5 extended-spectrum beta-lactamases. An AmpC-related enzyme which had a pI of 8.0 and which conferred resistance to cefoxitin as well as the expanded-spectrum cephalosporins was found in a strain of K. pneumoniae. This is the first study which has identified organisms producing different extended-spectrum beta-lactamases from South Africa and the first report describing strains of P. mirabilis producing a TEM-26-type enzyme. The variety of extended-spectrum beta-lactamases found among members of the family Enterobacteriaceae isolated from major medical centers in South Africa is troubling and adds to the growing list of countries where these enzymes pose a serious problem for antimicrobial therapy.

Pitt T.L. et al. *Type characterisation and antibiotic susceptibility of Burkholderia (Pseudomonas) cepacia isolates from patients with cystic fibrosis in the United Kingdom and the Republic of Ireland*. J Med Microbiol. 1996; 44(3) : 203-10.p Abstract: The spread of Burkholderia cepacia among cystic fibrosis (CF) patients in the UK prompted an investigation into whether an epidemic strain was responsible. A total of 366 B. cepacia isolates from 178 CF patients in 17 centres was examined by ribotyping and pulsed-field gel electrophoresis (PFGE). Associations were also sought between antibiotic resistance and strain type. More than 50 ribotype patterns were found but one, termed ribotype 1, was identified from 68 patients in eight centres. One centre had a single patient with this type while, in others, most or all patients harboured this organism. Small clusters of apparent cross-colonisation within centres were also evident for some other ribotypes. PFGE confirmed that ribotype 1 isolates were genetically similar. Ribotype 1 isolates were not markedly more resistant to antimicrobial agents than were other isolates, and the MICs of individual antibiotics were no more tightly clustered for ribotype 1 isolates than for others. Most isolates were resistant to ciprofloxacin, amikacin, gentamicin, tobramycin, carbenicillin, cefuroxime, cefotaxime, imipenem, biapenem, chloramphenicol, tetracycline, trimethoprim and sulphamethoxazole, but > or = 77% were susceptible to ceftazidime, piperacillin, piperacillin/ tazobactam and meropenem. We conclude that numerous strains of B. cepacia colonise CF patients in the UK and Ireland but that one epidemic strain has spread in at least eight centres. Isolates of this strain appear homogenous in total genomic profile but very variable in antibiotic susceptibility.

Pizarro P. R. et al. *Infección de tejidos blandos por salmonella typhi y paratyphi*. Rev. chil. infectología. 1995; 12(3) : 173-4.p Abstract: Between 1979 and 1989 patients presented with soft tissue infections caused by salmonella typhi or paratyphi B, at the Infectious Diseases Hospital Dr. Lucio Cordova, Santiago, Chile. These complications appeared during or after the clinical course of an enteric fever, or without any antecedent illness. The patients were predominantly young and females. The lesions were mainly located in the lower extremities. 50 percent of the patients presented with a concommitant deep bone or joint infection. 11 patients were treated with cloramphenicol (average 22,8 days), 3 with TMP-SMX (average 23 days) and 4 whith a combination of drugs. 13 patients required surgical drainage. This unusual complication extended hospital stay convelescence, but all our patients had a complete recovery (AU).

Plá M.d.P. *Emergencia del enterococo resistente como un patógeno de significado clínico.* Antibiot. infecc. 1995; 3(2) : 5-12.p Abstract: Los enterococos han sido implicados en la producción de infecciones desde 1899 estre las cuales se encuentran: endocarditis, infecciones del tracto urinario, pélvicas e intraabdominales, infecciones neonatales (sepsis y meningitis), del sistema nervioso central como la meningitis o infecciones de las derivaciones ventrículo peritoneales, y hoy en día se han transformado en patógenos nosocomiales importantes. De las especies conocidas de enterococos el E. faecalis causa el 80 a 90 por ciento de las infecciones atribuidas a este gérmen, y el E. faecium, del 5 al 15 por ciento. Recientemente el enterococo ha despertado la altención debido al aumento de la frecuencia con que produce infecciones nosocomiales y al desarrollo de la resistencia a muchos agentes antimicrobianos como los betalactámicos (ampicilina, cefalosporinas), glicopéptidos (vancomicina), carbapenems, cloranfenicol, clindamicina y aminoglucósidos. La aparición de resistencia a estas drogas ha ocacionado verdaderos dilemas terapéuticos y recomendaciones en cuanto al control en el uso de betalactámicos y vancomicina con el fin de disminuir la emergencia de los enterococos multiresistentes(AU).

Platonov A.E. et al. *[Multilocus sequencing—a new method of genotyping bacteria and first results of its use]*. Genetika. 2000; 36(5) : 597-605.p Abstract: Comparative characterization (molecular typing) of isolates within a bacterial species is one of the major problems in microbiology and epidemiology. However, it is rather difficult to correlate data obtained in various laboratories, because traditional, including molecular, methods employed in typing pathogenic microorganisms cannot be standardized. In 1998, Maiden et al. proposed multilocus sequence typing (MLST); through which alleles of several housekeeping genes are directly assessed by nucleotide sequencing, each unique allele combination determining a sequence type of a strain. The advantages of this approach are that the culturing of pathogenic microorganisms is avoided, as their gene fragments are amplified directly from biological samples, and that the sequencing data are unambiguous, easy to standardize, and electronically portable. The latter makes it possible to generate an expandable global database for each species at an Internet site, in order to use it for the purposes of genotyping pathogenic bacteria (and other infectious agents). MLST protocols have been elaborated for Neisseria meningitidis, Streptococcus pneumoniae, and Helicobacter pylori; those for Streptococcus pyogenes, Staphylococcus aureus, and Haemophilus influenzae are now being developed. Basic principles and the first results of MLST have been reviewed, including data on the distribution and microevolution of N. meningitidis clones causing epidemic meningococcal infection, the relative recombination and mutation rates in the N. meningitidis genome, the identification of antibiotic-resistant S. pneumoniae clones causing severe generalized infection, the grouping of H. pylori isolates from various geographic regions, etc.

Pleskach V.A. et al. *[Cytotoxic and mitogenic effect of antimicrobial peptides from neutrophils on cultured cells]*. Tsitologiia. 2000; 42(3) : 228-34.p Abstract: Cytotoxic and mitogenic activities of human and rabbit defensines (HNP and NP-2, resp.) and pig antimicrobial peptides from leukocytes (PR-39, prophenin PF-2 and protegrin PG-2) were studied. The above peptides were added to serum-free cell culture medium of the target cell lines K562, L929 and Hep22a. Cytotoxicity was estimated within 1, 3, 6, 24 and 48 h of cell incubation with the tested peptides in concentrations 1, 10, 25 or 100 micrograms/ml. All the examined peptides exhibited a distinct time- and concentration-dependent cytotoxicity. Moreover, by contrast to pig peptides,

defensines could induce proliferation in cell subpopulations from cell lines L929 amd Hep22a, or L929 (defensines HNP and NP-2, resp.), keeping resistance to their cytotoxic action.

Plouffe J.F. et al. *Bacteremia with Streptococcus pneumoniae. Implications for therapy and prevention. Franklin County Pneumonia Study Group.* JAMA. 1996; 275(3) : 194-8.p Abstract: OBJECTIVE—To determine the incidence and mortality rates of patients with bacteremic infections with Streptococcus pneumoniae, and to determine the serotypes and antimicrobial susceptibilities of the pneumococcal isolates. DESIGN—Prospective case ascertainment and procurement of S pneumoniae isolates between January 1991 and April 1994. SETTING—Ten adult care hospitals in Franklin County, Ohio. PATIENTS—Patients (N = 590) in whom S pneumoniae was isolated from blood cultures. MEASUREMENTS—Demographic data from patients with pneumococcal bacteremia were obtained by chart review. Pneumococcal serotyping and antimicrobial susceptibility testing were performed on 499 bacteremic isolates. RESULTS—Among residents of Franklin County, the annual incidence of pneumococcal bacteremia was higher in patients at least 65 years old (83.0 per 100,000 population) compared with younger adults (9.6 per 100,000 population) (odds ratio [OR], 8.74; 95% confidence interval [CI], 7.19 to 10.62) and more common among African Americans than whites (OR, 1.36; 95% CI, 1.06 to 1.75). The relative risk of pneumococcal bacteremia among persons infected with the human immunodeficiency virus was 41.8 times (CI, 19.0 to 92.0) that of county residents 18 to 64 years of age. The overall mortality rate was 19% and was age-dependent, reaching 38% in patients at least 85 years old. The distribution of pneumococcal serotypes causing bacteremia was remarkably consistent over time. The incidence of drug-resistant strains increased during the study period; by 1994 14% were resistant to penicillin, 12% to ceftazidime, and 24% to trimethoprim-sulfamethoxazole. The resistant strains included several serotypes of S pneumoniae. Most serotypes (89.8%) of S pneumoniae causing bacteremia are contained in the pneumococcal vaccine. CONCLUSIONS—Increased use of pneumococcal vaccine and recognition of antimicrobial resistance patterns may assist physicians in treating patients with S pneumoniae bacteremia. Educational programs to discourage unnecessary antimicrobial drug use should be developed for patients and physicians.

Podschun R. et al. *Klebsiella spp. as nosocomial pathogens: epidemiology, taxonomy, typing methods, and pathogenicity factors.* Clin Microbiol Rev. 1998; 11(4) : 589-603.p Abstract: Bacteria belonging to the genus Klebsiella frequently cause human nosocomial infections. In particular, the medically most important Klebsiella species, Klebsiella pneumoniae, accounts for a significant proportion of hospital-acquired urinary tract infections, pneumonia, septicemias, and soft tissue infections. The principal pathogenic reservoirs for transmission of Klebsiella are the gastrointestinal tract and the hands of hospital personnel. Because of their ability to spread rapidly in the hospital environment, these bacteria tend to cause nosocomial outbreaks. Hospital outbreaks of multidrug-resistant Klebsiella spp., especially those in neonatal wards, are often caused by new types of strains, the so-called extended-spectrum-beta-lactamase (ESBL) producers. The incidence of ESBL-producing strains among clinical Klebsiella isolates has been steadily increasing over the past years. The resulting limitations on the therapeutic options demand new measures for the management of Klebsiella hospital infections. While the different typing methods are useful epidemiological tools for infection control, recent findings about Klebsiella virulence factors have provided new insights into the pathogenic strategies of these bacteria. Klebsiella pathogenicity factors such as capsules or lipopolysaccharides are presently considered to be promising candidates for vaccination efforts that may serve as immunological infection control measures.

Poiata A. et al. *Development of resistance in Shigella flexneri isolates obtained in the past 20 years in eastern Romania.* Roum Arch Microbiol Immunol. 1996; 55(3) : 253-61.p Abstract: Our study is focused on the antimicrobial activity for a number of 626 Shigella flexneri strains collected from epidemic outbreaks and hospitalised patients during 1976-1995 period, in Eastern Romania. The metodology used for determining the in vitro activity of the antimicrobials was that described by NCCLS. The agents which are currently used in therapy (ampicillin, tetracycline, chloramphenicol) are less active than the newer drugs (third generation cephalosporins, aztreonam, imipenem, ciprofloxacin) for which sensitivity ranged between 93-100% The associated resistance between ampicillin, tetracycline, chloramphenicol was demonstrated. Isolates with MIC values for ampicillin > 8 micrograms/ml are still sensitive to the modern beta-lactams. For ampicillin/sulbactam association, sensitivity decreases from 100% in 1990-1993 to 43% in 1994-1995.

Polishchuk O.I. et al. *[The identification of freshly isolated strains, the causative agents of human candidiasis and the search for effective antifungal probiotics].* Mikrobiol Z. 1999; 61(4) : 45-53.p Abstract: The species variety of yeasts of the genus Candida in children and patients with AIDS has been investigated. Composition of the studied species was found to be similar in newborns and in women with candidiasis. In order to create new probiotics with antifungal properties, the cluster analysis of antagonistic activity of some Bacillus strains against Enterobacteriaceae, Candida, normoflora and food-fermenting lactobacteria has been conducted. There were selected the combinations of some Bacillus strains, which effectively inhibited pathogenic and opportunistic microorganisms and at the same time had no effect on intestinal normoflora.

Polk H.C. et al. *Multifactorial analyses in the diagnosis of pneumonia arising in the surgical intensive care unit.* Am J Surg. 2000; 179(2A Suppl) : 31S-35S.p Abstract: The diagnosis of ventilator-associated pneumonia in the surgical intensive care unit continues to be problematic. The majority of intensive care units use clinical criteria based on chest x-ray; fever; leukocytosis; alterations in the pulse oximeter observations; the need to alter modes and amounts of ventilatory support; and more specific microbiologic studies, such as appropriate sputum, Gram stain, and culture to identify pneumonia. Diagnosing pneumonia based on clinical criteria alone is often difficult and inaccurate, which may lead to inappropriate use and choice of antibiotics. Invasive diagnostic techniques, such as protected specimen brush and bronchoalveolar lavage, provide an important microbiologic diagnosis. However, the cost and inconvenience limit broad usage. Furthermore, those results that return positive are often too late to dictate the need for, or direction of, therapy. Our use of a "pneumonia grid" may help identify patients likely to have a poor outcome. Until a readily available and cost-effective diagnostic study for pneumonia is developed, clinical criteria remain vital in routine practice.

Polla B.S. et al. *Presence of hsp65 in bacterial extracts (OM-89): a possible mediator of orally-induced tolerance?* Experientia. 1995; 51(8) : 775-9.p Abstract: Heat shock proteins (HSP) have been implicated in rodent models of autoimmunity, particularly arthritis, and there is suggestive though inconclusive evidence that they may also play a role in human autoimmune disease. The simplest hypothesis is based on molecular mimicry due to the amino-acid sequence homology between mammalian and microbial HSP. Recently OM-89, an extract of several strains of Escherichia coli, has shown some efficacy in the treatment of rheumatoid arthritis (RA) when taken orally. Using species-specific antibodies, we show here that OM-89 contains the 65 kDa HSP (hsp65), while hsp65 was not detected in another bacterial extract containing other microorganisms, including Staphylococcus aureus (OM-85). We suggest that if the human homologue of hsp65 is a relevant target antigen in the human disease, the efficacy of the preparation could be due to induction of oral tolerance or to switching the Th1 response towards Th2. Alternatively, even if the human hsp65 is not a target molecule in RA joints, OM-89 may evoke bystander suppression of joint inflam-

mation via induction of TGF beta-secreting effector cells. These hypotheses should be tested in further studies.

Ponce de Leon-Rosales S.P. et al. *Prevalence of infections in intensive care units in Mexico: a multicenter study.* Crit Care Med. 2000; 28(5) : 1316-21.p Abstract: OBJECTIVE: To determine the 1-day prevalence of community-acquired, hospital-acquired, or intensive care unit (ICU)-acquired infections in Mexican ICUs. To identify associated risk factors, predominant infecting organisms, and mortality rates. DESIGN: A 1-day point-prevalence study. SETTING: A total of 254 adult ICUs in Mexico. PATIENTS: Adult patients hospitalized in the participating ICUs. RESULTS: A total of 895 patients were studied, of whom 521 patients (58.2%) were infected. Community-acquired infection occurred in 214 patients (23.9%), non-ICU nosocomial infection occurred in 99 patients (11.1%), and 208 patients had at least one ICU-acquired infection (23.2%; 1.45 episodes/patient). The most frequently reported ICU-acquired infections were pneumonia (39.7%), urinary tract infections (20.5%), wound infection (13.3%), and bacteremia (7.3%). The mortality rate for the ICU-acquired infections after 6 wks of follow-up was 25.5%. Multivariate regression analysis showed the following risk factors for ICU-acquired infections: neurologic failure as a primary cause of admission (odds ratio [OR], 1.697; 95% confidence interval [CI], 1.001-2.839); length of stay in ICU (OR, 1.119; 95% CI, 1.091-1.151); number of therapeutic and/or diagnostic interventions during the preceding week (OR, 1.118; 95% CI, 1.016-1.231); peripherally administered infusion of hyperosmolar solutions (OR, 6.93; 95% CI, 2.452-21.661); sedative usage in the preceding week (OR, 1.751; 95% CI, 1.183-2.602); history of an emergency surgery in the preceding month (OR, 1.875; 95% CI, 1.251-2.813). The administration of antimicrobial treatment if there was an infection decreased the risk of death (OR, 0.406; 95% CI, 0.204-0.755). CONCLUSIONS: Evidence of a high frequency of nosocomial infections was found, and potential risk factors for acquiring infections and mortality were identified. Mortality rates according to the hierarchy of the systemic inflammatory response syndrome in Latin American ICUs are reported.

Pontani D. et al. *Susceptibility of European respiratory tract isolates to trovafloxacin, ciprofloxacin, clarithromycin, azithromycin and ampicillin.* Eur J Clin Microbiol Infect Dis. 1998; 17(6) : 413-9.p Abstract: As part of the Artemis project, 11500 isolates (3000 from patients with respiratory tract infections) were collected throughout six European countries between 1994 and 1996. Twenty-seven hospitals or laboratories participated in this first phase of the study. The activities of three classes of antimicrobial agents (fluoroquinolones, beta-lactam agents, macrolides) are presented for the six most frequently isolated pathogens (Streptococcus pneumoniae, Staphylococcus aureus, Haemophilus influenzae, Moraxella catarrhalis, Pseudomonas aeruginosa, Klebsiella pneumoniae). Overall, trovafloxacin and ciprofloxacin activities were similar for Haemophilus influenzae, Moraxella catarrhalis and Klebsiella pneumoniae isolates. Of the Streptococcus pneumoniae isolates, 6% were resistant to penicillin. Trovafloxacin had the highest activity against the Streptococcus pneumoniae isolates, with a minimum inhibitory concentration of 0.25 mg/l for 90% of isolates (MIC90); all strains tested were susceptible to trovafloxacin. The MIC90 of ciprofloxacin for Streptococcus pneumoniae was 3 mg/l, and overall 52% of the strains were susceptible; 9% were resistant. Azithromycin and clarithromycin exhibited similar activity against all collected pathogens, except Haemophilus influenzae. All strains of Haemophilus influenzae were susceptible to azithromycin compared with 79% for clarithromycin, with respective MIC90s of 2 and 16 mg/l. The data presented demonstrate differences in the susceptibility patterns of six major respiratory tract pathogens in Europe.

Poole M.D. *Antimicrobial therapy for sinusitis.* Otolaryngol Clin North Am. 1997; 30(3) : 331-9.p Abstract: Rational antibiotic therapy for sinusitis is a difficult goal, made difficult by few satisfactory comparative trials with sufficient clinical power, the large numbers of therapeutic options, prescribing pressures from the pharmaceutical industry, and rapid changes in bacterial resistance patterns. Controversies exist about the relative need of antibiotics for uncomplicated disease, duration of therapy, and relative efficacy of various agents. Nonetheless, limited data support the notion of superior efficacy of more potent antimicrobials, and an analysis of in vitro activity versus tissue concentrations of the various antibiotics can predict efficacy of eradication of causative bacteria. Multidrug-resistant pneumococci render any algorithm for empiric antibiotic use problematic and prone to fail.

Poole M.D. *Otitis media complications and treatment failures: implications of pneumococcal resistance.* Pediatr Infect Dis J. 1995; 14(4 Suppl) : S23-6.p Abstract: Classic complications of untreated otitis media include meningitis, lateral sinus thrombosis and chronic suppurative otitis media. In the past, in countries where otitis media is usually treated, complications have been rare, because of the good activity of almost all orally administered antibiotics against the most common cause of complications, Streptococcus pneumoniae. Treatment failures were usually caused by beta-lactamase-producing nontypable Haemophilus influenzae or by Moraxella (Branhamella) catarrhalis and were rarely associated with serious systemic infections. With the advent of multidrug-resistant pneumococci, however, serious and fatal infections can occur in the face of our most potent antimicrobial agents. The consequences of the emergence of multidrug-resistant pneumococci are likely to include more persistent purulent otitis media, increased usage of broad-spectrum antibiotics, an increase in surgical treatment rates for otitis media and, eventually, an increase in suppurative complications of otitis media. Medical treatment failures probably already surpass eustachian tube dysfunction as the most common reason for tympanostomy tube insertion. Multidrug-resistant pneumococci may be expected to change the way in which primary and secondary care is currently administered.

Porat N. et al. *Molecular typing of Streptococcus pneumoniae in northeastern Romania: unique clones of S. pneumoniae isolated from children hospitalized for infections and from healthy and human immunodeficiency virus-infected children in the community.* J Infect Dis. 2000; 181(3) : 966-74.p Abstract: Microbiologic, serologic, and molecular typing techniques were used to characterize 272 isolates of Streptococcus pneumoniae colonizing or infecting children in Iasi, Romania, during a surveillance study conducted in 1996-1998. The 574 children in the study were from the following groups: healthy children attending 2 institutions, healthy children hospitalized for elective surgery, hospitalized children with pneumococcal infections, and human immunodeficiency virus (HIV)-infected children in an orphanage. Pneumococci colonizing healthy children from closed communities showed close similarities to pneumococci from children with pneumococcal infections; they expressed a limited number of similar serotypes, showed high frequency of penicillin and multidrug resistance, and shared several common clonal types. In contrast, isolates recovered from healthy children hospitalized for elective surgery expressed a large variety of serotypes, were less frequently resistant to antimicrobial agents, and showed great genetic diversity. Pneumococcal flora colonizing HIV-infected children showed a more complex epidemiology. These observations suggest a possible epidemiologic connection between the flora of S. pneumoniae colonizing healthy children in closed communities and the flora found in children hospitalized for infection.

Porwancher R. et al. *Epidemiological study of hospital-acquired infection with vancomycin-resistant Enterococcus faecium: possible transmission by an electronic ear-probe thermometer.* Infect Control Hosp Epidemiol. 1997; 18(11) : 771-3.p Abstract: Clonal spread of vancomycin-resistant Enterococcus faecium among seven patients on one ward of a community teaching hospital was identified by contour-clamped homogeneous electric-field gel electrophoresis. Environmental cultures isolated the same strain from the handle of a shared electronic ear-probe thermometer. Cross-contamination of the clonal strain

between two geographically separate units on this ward, sharing equipment but not personnel, suggests the possibility of an environmental source.

Post J.C. et al. *Development and Validation of a Multiplex PCR-Based Assay for the Upper Respiratory Tract Bacterial Pathogens Haemophilus influenzae, Streptococcus pneumoniae, and Moraxella catarrhalis.* Mol Diagn. 1996; 1(1) : 29-39.p Abstract : Background: Conventional simplex polymerase chain reaction (PCR)-based assays are limited in that they only provide for the detection of a single infectious agent. Many clinical diseases, however, present in a nonspecific, or syndromic, fashion, thereby necessitating the simultaneous assessment of multiple pathogens. Panel-based molecular diagnostic testing can be accomplished by the development of multiplex PCR-based assays, which can detect, individually or severally, different pathogens that are associated with syndromic illness. As part of a larger program of panel development, an assay that can simultaneously detect Haemophilus influenzae, Streptococcus pneumoniae, and Moraxella catarrhalis was developed. These organisms were chosen as they are the most common bacterial pathogens associated with both the acute and chronic forms of otitis media; they are also responsible for a high percentage of sinus infections in both children and adults. In addition, H. influenzae and S. pneumoniae are commonly associated with septic meningitits. Methods and Results: Multiple individual PCR-based assays were developed for each of the three target organisms which were then evaluated for sensitivity and specificity. Utilizing the simplex assays that met our designated performance criteria, a matrix style approach was used to develop a duplex H. influenzae-S. pneumoniae assay. The duplex assay was then used as a single component in the development of a triplex assay, wherein the various M. catarrhalis primer-probe sets were tested for compatibility with the existing assay. A single-step PCR protocol, with species-specific primers for each of the three target organisms and a liquid hybridization-gel retardation amplimer detection system, was developed, which amplifies and then discriminates among each of the amplification products according to size. This assay is able to detect all three organisms in a specific manner, either individually or severally. Dilutional experiments indicate a detection limit of 10 femtograms (fg)(6-7 genomic equivalents) or less of genomic DNA for each of the three microorganisms regardless of the presence of irrelevant DNA. Conclusions: The reliance on individual, robust, species-specific primers and the avoidance of a nested PCR approach make this bacterial multiplex assay suitable for use in the clinical laboratory. This assay has proved useful in both research and patient care applications.

Potapchenko N.G. et al. *[The decontamination of microorganisms in potable water by using ultraviolet radiation].* Mikrobiol Z. 1995; 57(1) : 85-91.p Abstract: The inactivation of Escherichia coli, Streptococcus faecalis, Proteus vulgaris, Pseudomonas aeruginosa and Bacillus subtilis by UV radiation in batch and flow-through systems and influence of different factors on inactivation have been studied. The necessary required disinfection doses were defined and compared with the data of other authors.

Potgieter P.D. et al. *Prophylactic use of the new quinolones for prevention of nosocomial infection in the intensive care unit.* Drugs. 1995; 49 Suppl 2 : 86-91.p Abstract: The new quinolone antimicrobial agents, particularly those with less activity against anaerobes, selectively prevent colonisation of the alimentary tract by Gram-negative bacilli and staphylococci without substantially affecting the normal anaerobic flora, which preserve the colonisation resistance of the gut. These properties ideally position this class of antibacterial agent for selective decontamination of the digestive tract (SDD) in the prevention of nosocomial infection. The rationale for this procedure is based on the presumption that a significant proportion of infections in compromised patients are endogenous in origin, arising from the host's own microbial flora. If this colonisation by potentially pathogenic microflora within the normal flora can be significantly reduced without being replaced by other more pathogenic microorganisms, the risk of endogenous infection should be minimised. The quinolones have proved to be ideal agents for use in preventing infection in bone marrow transplant and other neutropenic patients. They have been used for SDD in the general intensive care unit population, although the technique has not received widespread acceptance. There have been only 4 reported randomised studies using quinolones as part of SDD regimens and only 301 patients have been evaluated. Although the incidence of ventilator-associated pneumonia has been significantly reduced from 36 to 15%, no effect has been shown on mortality. The cost of using SDD is significantly less with the quinolones than with other regimens, and induction of resistance has not been noted. The new quinolones, and in particular the more recently developed agents with extended Gram-positive activity, appear to be ideally suited for SDD, and their careful evaluation in further large, well designed trials is warranted.

Poutanen S.M. et al. *Molecular characterization of multidrug resistance in Streptococcus mitis.* Antimicrob Agents Chemother. 1999; 43(6) : 1505-7.p Abstract: Antimicrobial resistance was characterized for 14 strains of Streptococcus mitis. HinfI restriction fragment length mapping of gyrA PCR amplicons from three ciprofloxacin-resistant isolates correlated with mutations associated with such resistance in other organisms. By using PCR, seven erythromycin-resistant strains were found to possess either the mef or ermB gene. Hybridization revealed tet(M) in seven tetracycline-resistant isolates.

Poutou R. et al. *Estudio molecular de la resistencia antimicrobiana de escherichia coli enteropatógena aisladas de pacientes ediátricos con enfermedad diarréica aguda.* Med. UIS. 1998; 12(5) : 248-51.p Abstract: Introducción. La enfermedad diarréica aguda es una de las enfermedades más frecuentes en Colombia. Esta entidad en algunso casos requiere tratamiento antimicrobiano, convirtiéndose ste último en un importante factor dentro de la prescripción mádica. El objetivo de este estudio fue establecer una relación entre la tenencia de plásmidos y la resistencia a diferentes antibióticos. Materiales y Métodos. Se analizaron cien cepas de Escherichia coli entropatógena aisladas de niños con enfermedad diarréica aguda. Para la extracción del ADN plasmídico se utilizó el método descrito por Sambrook y cols y para determinar los genes de resistencia presentes en los plásmidos aislados, se realizó una trasformación con una cepa competente de E. coli k12 yY1090. Resultados. El 60% de las cepas aisladas (60/100) fueron resistentes a antibióticos, cuyas resistencias se encontraron distribuidas de la siguiente manera, ampicilina 60% (36/60), tetraciclina 65% (39/60) y 55 por ciento (33/60) para trimetropin sulfametoxazol. El experimentao de transformación demostró que el 45.5% (15/33) de los plásmidos aislados transformaron, mientras que el 54.5 por ciento (18/33) restantes no. La resistencia en los plásmidos transformados se distribuyó de igual manera para cada antibiótico, 53.3% (8/15). Conclusión. El estudio permitió concluir quu hay un alto porcentaje de multirresistencia en las cepas de E. coli enteropatógena, lo cual está mediado por ADN plasmídico(AU).

Pradier C. et al. *Pneumococcal resistance patterns in Europe.* Eur J Clin Microbiol Infect Dis. 1997; 16(9) : 644-7.p Abstract: The emergence of Streptococcus pneumoniae strains with decreased susceptibility to penicillin has been reported worldwide over the past 20 years. However, there are striking discrepancies in penicillin susceptibility among various European countries, suggesting that local conditions may affect clonal propagation or de novo selection of resistant strains. In the present study, data on penicillin resistance patterns, antibiotic use and mode of administration, and treatment compliance in five European countries (France, Spain, Germany, Italy, and the UK) were compared. High prevalence rates of penicillin-resistant pneumococci have been reported in Spain and France, where antibiotics are widely prescribed, and overall in Europe, patient compliance with more than 50% of oral antimicrobial prescriptions is inadequate. The low prevalence of penicillin resistance in Germany

and the UK coincides with lower antibiotic consumption and better treatment compliance in these countries. Recent attempts to raise public awareness and to restrict and improve indications for antimicrobial agents have resulted in decreased pneumococcal resistance in Hungary and Iceland, suggesting that pneumococcal resistance can be reversed.

Prado Jiménez V. *Enfermedades infecciosas emergentes: un problema nuevo?* Rev. m,d. Chile. 1996; 124(1) : 7-10.p Abstract: Are the emergent pathogenic microbes, persistent bacteria that have changed their virulence or new diagnostic techniques now allow their recognition? Or, have they found a new possibility of transmission due to ecological, social or cultural changes?. The present editorial analyses the geographical distribution, features and host factors that favor infections by Helicobacter pylori, entretohemorhagic E. coli, invasive Streptococcus pyogenes and Borrelia Burgdorfi. The surveillance and care of infections caused by emergent germs requires laboratory learning programs as those established in United States (AU).

Prado Jiménez V. et al. *Susceptibilidad in vitro de escherichia coli enterohemorrágicas frente a 11 antimicrobianos: relación entre resistencia antibiótica y genotipos toxigénicos.* Rev. méd. Chile. 1995; 123(9) : 1085-90.p Abstract: Enterohemorrhagic escherichia coli (EHEC) has been recognized as the main etiologic agent of hemorrhagic colitis and hemolytic uremic syndrome (HUS). The usefulness of antibiotic treatment in patients with EHRC infections is a matter of current debate. Knowledge on EHEC antimicrobial susceptibility patterns in different geographic areas is important for both treatment considerations and for strain characterization. We studied by diffusion disk agar technique the antibiotic susceptibility of 83 EHEC strains obtained from stools of patients with HUS or diarrhea. Eleven antimicrobials were tested (ampicillin, cotrimoxazole, tetracycline, chloramphenicol, furazolidone, gentamycin, amikacin, ciprofloxacin, erythromycin, vancomycin and metronidazol). Resistant strains by disk diffusion were tested for MIC (mg/ml) by agar dilution. SLT-I and SLT-II were detected with specific biotinylated gene probes. All 83 strains were susceptible to furazolidone, ciprofloxacin, gentamycin and amikacin. Resistance was detected to tetracycline 4 percent, chloramphenicol 5 percent, cotrimoxazole 24 percent and ampicillin 25 percent. As expected for EHEC strains all were resistant to erythromycin, vancomycin and metronidazol. Resistant strains were significantly more common in non toxigenic and SLT-I producing strains (p=0.01). Resistant strains were similarly distributed among patients who had diarrhea only and those who developed HUS (p=0.3). In Chile, resistant EHEC strains seem to be more common and of different genotypes than those reported in more developed countries. Regional differences of EHEC antibiotic susceptibility patterns indicate a need for continious monitoring, specially if antibiotic prove to be useful in disease prevention (AU).

Prado Jiménez V. et al. *Multirresistencia antimicrobiana en cepas de shigella sp en una comuna semi rural del área norte de Santiago.* Rev. méd. Chile. 1998; 126(12) : 1464-71.p Abstract: Appropriate antimicrobial therapy shortens the duration of Shigellosis and significantly reduces the risk of transmission. Shigella strains resistant to common antimicrobials have increased during the past years, determining the need for a periodic surveillance, to guide effective therapy. Aim: To report the results of a surveillance program in a rural community near Santiago (Colina), for Shigella infections. Material and methods: Between 1995 and 1997, stool samples from 3,534 episodes of diarrhoea, that occurred in Colina, were obtained. Two hundred twenty six Shigella strains were isolated and studied for susceptibility to ampicilin (AM), amoxicillin/clavulanic acid (AMC), cotrimoxazole (STX), chloramphenicol (CAF), tetracycline (TET), furazolidine (FU), ciprofloxacine (CIPR), nalidixic acid (AC NAL), gentamycin (GENT) and cefotaxime (CFTX). Results: Shigella flexnerii represented 134 of 226 Shigella strains isolated. All strains were susceptible to CIPR, AC NAL, GENT and CFTX. Yearly variation of resistance patterns to other antimicrobials were observed for these strains. Resistance to AM varied from 56 to 76 percent, to AMC from 25 to 56 percent, to STX from 21 to 47 percent, to CAF from 36 to 39 percent, to TET from 44 to 78 percent and to FU from 9 to 18 percent. Overall resistance was higher during 1997. All 85 strains of S sonnei were susceptible to CIPR, AC NAL and CFTX. Resistance throughout the years varied from 56 to 88 percent for AM, from 0 to 28 percent for AMC, from 44 to 53 percent for STX, from 11 to 40 percent for CAF, from 11 to 42 percent for TET and from 5 to 11 percent for FU. Overall resistance was also higher during 1997, except for AM and STX. Seven S boydii strains were isolated, only during 1995. All seven were resistant to AM and TET and none were resistant to FU, CIPR, AC NAL and CFTX. One strain was resistant to AMC, STX and CAF. Conclusions: Antimicrobial resistance patterns of Shigella sp isolated in Colina have increased from 1995 to 1997, specially for commonly used antimicrobials. Resistance remains low for furazolidine and all strains remain susceptible to quinolones (AU).

Prado Jiménez V. et al. *Actividad comparativa in vitro de la combinación amoxicilina-sulbactam y otros 4 antimicrobianos frente a bacterias aisladas de pacientes con infecciones respiratorias adquiridas en la comunidad*. Rev. chil. infectología. 1997; 14(1) : 28-36.p Abstract: En los últimos años, a nivel mundial se han producido cambios en la etiología de la infección respiratoria y los microorganismos causases muestran resistencia progresiva a los antimicrobianos de uso habitual. Esto ha llevado a la búsqueda de nuevas alternativas terapéuticas. El propósito de este estudio fue comparar la susceptibilidad antimicrobiana in vítro, de 150 cepas bacterianas aisladas durante el primer semestre 1997, de adultos y niños con infeccion respiratoria superior o inferior, frente a la nueva asociación amoxicilina/ sulbactam (amox/sul) y otros 4 antimicrobianos de uso frecuente en Chile en estas patologías. Se determinó la CIM mediante técnica de dilución en agar de amoxicilina (amox), amox/ sul, cefuroxima (cefu), azitromicina (azit) y claritromicina (ciarl) frente a 55 cepas de S. pneumoniae, 44 cepas de H. ínfluenzae, 19 cepas de S. pyogenes y 32 S. aureus. Resultados. De las 55 cepas de S. pneumoniae, 9.1 por ciento fueron resistentes 1 amox, 7,3 por ciento a amox/Sul y cefu y ninguna presentó resistencia a azit o ciarl. Las 19 cepas de S. pyogenes estudiadas fueron sensibles a los 5 antimicrobianos, aunque cepas presentaron CIM límite a azit y ciarl (igual al valor de corte). De las 44 cepas de H. influenzae, 12,3 por ciento presentaron resistencia a amox y 9,1 por ciento a clarí. No se observó resistencia a amox/sul, cefu ni azit. En las cepas de S. aureus se observó resistencia importante a todos los antimicrobianos estudiados: 96 por ciento para amox, 56,3 por ciento para cefu, 59,4 por ciento para ciarl y azit y 46,9 por ciento para amox/sul. Conclusión: De acuerdo a nuestros resultados in vitro, la combinación amoxicilina/sulbactam, frente a bacterias causantes de infecciones respiratorias, tiene una cobertura comparable a otros antimicrobianos en uso e incluidos en este estudio (entre 100 y 54 por ciento) con la excepción de S. aureus que debería ser tratado con antimicrobianos con actividad antiestafilocóccica específica (AU).

Prado V. et al. *[In vitro susceptibility of enterohemorrhagic Escherichia coli to 11 antimicrobials. Relationship between antibiotic resistance and toxigenic genotype].* Rev Med Chil. 1995; 123(9) : 1085-90.p Abstract: Enterohemorrhagic E coli (EHEC) has been recognized as the main etiologic agent of hemorrhagic colitis and hemolytic uremic syndrome (HUS). The usefulness of antibiotic treatment in patients with EHEC infections is a matter of current debate. Knowledge on EHEC antimicrobial susceptibility patterns in different geographic areas is important for both treatment considerations and for strain characterization. We studied by diffusion disk agar technique the antibiotic susceptibility of 83 EHEC strains obtained from stools of patients with HUS or diarrhea. Eleven antimicrobials were tested (ampicillin, cotrimoxazole, tetracycline, chloramphenicol, furazolidone, gentamycin, amikacin, ciprofloxacin, erythromycin, vancomycin, and metronidazol). Resistant strains by disk diffusion were

tested for MIC (mg/ml) by agar dilution. SLT-I and SLT-II were detected with specific biotinylated gene probes. All 83 strains were susceptible to furazolidone, ciprofloxacin, gentamycin and amikacin. Resistance was detected to tetracycline 4%, chloramphenicol 5%, cotrimoxazole 24% and ampicillin 25%. As expected for EHEC strains all were resistant to erythromycin, vancomycin, and metronidazol. Resistant strains were significantly more common in non toxigenic and SLT-I producing strains ($p = 0.01$). Resistant strains were similarly distributed among patients who had diarrhea only and those who developed HUS ($p = 0.3$). In Chile, resistant EHEC strains seem to be more common and of different genotypes than those reported in more developed countries. Regional differences of EHEC antibiotic susceptibility patterns indicate a need for continuous monitoring, specially if antibiotics prove to be useful in disease prevention.

Prado V. et al. *[Antimicrobial multiresistance of Shigella sp strains in a semi rural community of northern Santiago].* Rev Med Chil. 1998; 126(12) : 1464-71.p Abstract: Appropriate antimicrobial therapy shortens the duration of Shigellosis and significantly reduces the risk of transmission. Shigella strains resistant to common antimicrobials have increased during the past years, determining the need for a periodic surveillance, to guide effective therapy. AIM: To report the results of a surveillance program in a rural community near Santiago (Colina), for Shigella infections. MATERIAL AND METHODS: Between 1995 and 1997, stool samples from 3,534 episodes of diarrhoea, that occurred in Colina, were obtained. Two hundred twenty six Shigella strains were isolated and studied for susceptibility to ampicilin (AM), amoxicillin/clavulanic acid (AMC), cotrimoxazole (STX), chloramphenicol (CAF), tetracycline (TET), furazolidine (FU), ciprofloxacine (CIPR), nalidixic acid (AC NAL), gentamycin (GENT) and cefotaxime (CFTX). RESULTS: Shigella flexnerii represented 134 of 226 Shigella strains isolated. All strains were susceptible to CIPR, AC NAL, GENT and CFTX. Yearly variation of resistance patterns to other antimicrobials were observed for these strains. Resistance to AM varied from 56 to 76%, to AMC from 25 to 56%, to STX from 21 to 47%, to CAF from 36 to 69%, to TET from 44 to 78% and to FU from 9 to 18%. Overall resistance was higher during 1997. All 85 strains of S sonnei were susceptible to CIPR, AC NAL and CFTX. Resistance throughout the years varied from 56 to 88% for AM, from 0 to 28% for AMC, from 44 to 53% for STX, from 11 to 40% for CAF, from 11 to 42% for TET and from 5 to 11% for FU. Overall resistance was also higher during 1997, except for AM and STX. Seven S hoydii strains were isolated, only during 1995. All seven were resistant to AM and TET and none were resistant to FU, CIPR, AC NAL and CFTX. Two strain was resistant to AMC, STX and CAF. CONCLUSIONS: Antimicrobial resistance patterns of Shigella sp isolated in Colina have increased from 1995 to 1997, specially for commonly used antimicrobials. Resistance remains low for furazolidine and all strains remain susceptible to quinolones.

Prado V. et al. *[In vitro comparative activity (E test) of sparfloxacin and other 8 antimicrobial agents against bacteria isolated from patients with respiratory infections acquired in the community].* Rev Med Chil. 1995; 123(11) : 1394-1401.p Abstract: Sparfloxacin is a new antimicrobial that, while maintaining a good activity against gram negative bacilli, has a better in vitro activity against gram positive bacteria such as S pneumoniae, intracellular pathogens and anaerobic bacteria. The aim of this work was to study the in vitro activity of sparfloxacin against bacteria isolated from patients with community acquired respiratory infections between October 1994 and January 1995. Using the E-test technique, we studied the susceptibility to sparfloxacin, ciprofloxacin, ampicillin, amoxicillin/clavulanic acid, cefuroxime, cefotaxime, erythromycin, methicillin and nalidixic acid of 50 strains of S pneumoniae, 50 strains of H. influenzae, 50 strains of S aureus and 50 strains of S pyogenes. Sparfloxacin was active against 100% of S pneumoniae, H influenzae and S pyogenes strains. Twenty two percent of S aureus strains were resistant and the MIC 90 was 12 micrograms/ml. Sparfloxacin showed the best in vitro activity against H influenzae and S aureus, a similar activity with ampicillin and cefotaxime against S pneumoniae and a similar activity with ampicillin but superior to all other studied antimicrobial against S pyogenes. It is concluded that sparfloxacin is a good antimicrobial for bacteria isolated from patients with respiratory infections.

Prashanth K. et al. *Simplified phenotypic tests for identification of Acinetobacter spp. and their antimicrobial susceptibility status.* J Med Microbiol. 2000; 49(9) : 773-8.p Abstract: Acinetobacter spp. have been found to be responsible for an increasing number of nosocomial infections. During a 16-month period, 22 patients hospitalised mainly in the respiratory intensive care unit (RICU), paediatric and other medical wards were investigated either for infection or colonisation by Acinetobacter spp. Of the 45 isolates of Acinetobacter detected among the total of 425 non-fermenters encountered, 24 representative isolates were selected for extended phenotypic identification. Four environmental isolates were also included in the study. These 28 isolates were typed by biotyping and antibiotyping, which helped in delineating the Acinetobacter spp. into 12 phenotypes and two distinct antibiotypes respectively. A sudden increase of cases of acinetobacter infection suggested that three outbreaks during the study period were due to phenotypes 1 and 2 of A. calcoaceticus-A. baumannii complex (Acb). Strains of Acb-complex showed multiple drug resistance and were sensitive only to netilmicin. A comparatively high proportion of resistance to amikacin (48%) was also detected among these strains by the agar dilution method. The RICU environment was recognised as an important reservoir for the resistant outbreak strain (Acb-1) which was probably leading to persistent colonisation and recurrent infections.

Prats G. et al. *Antibiotic resistance trends in enteropathogenic bacteria isolated in 1985-1987 and 1995-1998 in Barcelona.* Antimicrob Agents Chemother. 2000; 44(5) : 1140-5.p Abstract: Trends in resistance to antimicrobial agents used for therapy have been evaluated with 3,797 enteropathogenic bacteria, Campylobacter, Salmonella, Shigella, and Yersinia, between 1985-1987 and 1995-1998. The greater increase in the rate of resistance was observed in Campylobacter jejuni for quinolones (from 1 to 82%) and tetracycline (from 23 to 72%) and in gastroenteric salmonellae for ampicillin (from 8 to 44%), chloramphenicol (from 1.7 to 26%), and trimethoprim-sulfamethoxazole and nalidixic acid (from less than 0.5 to 11%). Multidrug resistance was detected in several Salmonella serotypes. In the 1995-1998 period, 76% of Shigella strains were resistant to trimethoprim-sulfamethoxazole, 43% were resistant to ampicillin, and 39% were resistant to chloramphenicol. Seventy-two percent of Yersinia enterocolitica O3 strains were resistant to streptomycin, 45% were resistant to sulfonamides, 28% were resistant to trimethoprim-sulfamethoxazole, and 20% were resistant to chloramphenicol.

Prats G. et al. *Escherichia coli serotype O15:K52:H1 as a uropathogenic clone.* J Clin Microbiol. 2000; 38(1) : 201-9.p Abstract: To clarify the clinical and bacteriological correlates of urinary-tract infection (UTI) due to Escherichia coli O15:K52:H1, during a 1-year surveillance period we prospectively screened all 1, 871 significant E. coli urine isolates at the Hospital de la Santa Creu i Sant Pau, Barcelona, Spain, for this serotype and assessed the epidemiological features of community-acquired UTI due to E. coli O15:K52:H1 versus other E. coli serotypes. We also compared the 25 O15:K52:H1 UTI isolates from the present study with 22 O15:K52:H1 isolates from other, diverse geographic locales and with 23 standard control strains (8 strains from the ECOR reference collection and 15 strains of nonpathogenic O:K:H serotypes) with respect to multiple phenotypic and genotypic traits. Although E. coli O15:K52:H1 caused only 1.4% of community-acquired E. coli UTIs during the surveillance period, these UTIs were more likely to present as pyelonephritis and to occur in younger hosts, with similar risk factors, than were UTIs due to other E. coli serotypes. Irrespective of geographic ori-

gin, E. coli O15:K52:H1 strains exhibited a comparatively restricted repertoire of distinctive virulence factor profiles (typically, they were positive for papG allele II, papA allele F16, and aer and negative for sfa, afa, hly, and cnf1), biotypes, ribotypes, and amplotypes, consistent with a common clonal origin. In contrast, their antimicrobial resistance profiles were more extensive and more diverse than those of control strains. These findings indicate that E. coli O15:K52:H1 constitutes a broadly distributed and clinically significant uropathogenic clone with fluid antimicrobial resistance capabilities.

Price M.F. et al. *Prevalence of methicillin-resistant Staphylococcus aureus in a dermatology outpatient population.* South Med J. 1998; 91(4) : 369-71.p Abstract: BACKGROUND: The number of methicillin-resistant STaphylococcus aureus (MRSA) infections in the hospital setting is increasing but little is known of its prevalence in the community. In a 1986-1987 study, the prevalence in dermatology outpatient clinics was <0.9%. This study reports changes in the same facilities from 1988 through 1996. METHODS: Culture results and antimicrobial susceptibility patterns were reviewed for the population for the period 1988 through 1996. RESULTS: We report a gradual increase of MRSA from 1.5% of all strains of Staphylococcus aureus in 1988 to 11.9% in 1996 in these outpatient facilities. Susceptibility data indicate that the MRSA strains isolated in 1996 are more resistant to oral agents such as ciprofloxacin and tetracycline, while all strains remain susceptible to the intravenous agent vancomycin. CONCLUSION: The prevalence of MRSA in the community is increasing and should be considered when selecting a treatment regimen for staphylococcal infections.

Pridmore R.D. et al. *Genomics, molecular genetics and the food industry.* J Biotechnol. 2000; 78(3) : 251-8.p Abstract: The production of foods for an increasingly informed and selective consumer requires the coordinated activities of the various branches of the food chain in order to provide convenient, wholesome, tasty, safe and affordable foods. Also, the size and complexity of the food sector ensures that no single player can control a single process from seed production, through farming and processing to a final product marketed in a retail outlet. Furthermore, the scientific advances in genome research and their exploitation via biotechnology is leading to a technology driven revolution that will have advantages for the consumer and food industry alike. The segment of food processing aids, namely industrial enzymes which have been enhanced by the use of biotechnology, has proven invaluable in the production of enzymes with greater purity and flexibility while ensuring a sustainable and cheap supply. Such enzymes produced in safe GRAS microorganisms are available today and are being used in the production of foods. A second rapidly evolving segment that is already having an impact on our foods may be found in the new genetically modified crops. While the most notorious examples today were developed by the seed companies for the agro-industry directed at the farming sector for cost saving production of the main agronomical products like soya and maize, its benefits are also being seen in the reduced use of herbicides and pesticides which will have long term benefits for the environment. Technology-driven advances for the food processing industry and the consumer are being developed and may be divided into two separate sectors that will be presented in greater detail: 1. The application of genome research and biotechnology to the breeding and development of improved plants. This may be as an aid for the cataloging of industrially important plant varieties, the rapid identification of key quality traits for enhanced classical breeding programs, or the genetic modification of important plants for improved processing properties or health characteristics. 2. The development of advanced microorganisms for food fermentations with improved flavor production, health or technological characteristics. Both yeasts and bacteria have been developed that fulfill these requirements, but are as yet not used in the production of foods.

Principi N. et al. *Risk factors for carriage of respiratory pathogens in the nasopharynx of healthy children. Ascanius Project Collaborative Group.* Pediatr Infect Dis J. 1999; 18(6) : 517-23.p Abstract: OBJECTIVES: To assess risk factors for nasopharyngeal carriage of Streptococcus pneumoniae, Haemophilus influenzae and Moraxella catarrhalis in a large sample of healthy children. METHODS: In this point prevalence survey nasopharyngeal specimens were obtained from 1723 healthy children, ages 1 to 7 years, attending day-care centers or schools in 18 Italian cities. Written questionnaires for obtaining information about the demographics and medical history of the children were completed by the parents in the presence of a pediatrician. RESULTS: The overall carrier rate of respiratory pathogens was 17.9% (S. pneumoniae, 3.5%; H. influenzae, 11.9%; M. catarrhalis, 4.1%). Only 5% of S. pneumoniae strains were penicillin-resistant whereas approximately 40% were erythromycin-resistant. Beta-lactamase production was found in 5.8% of H. influenzae and 88.7% of M. catarrhalis isolates. By multivariate analysis age (< or = 3 years), having older siblings, a history of prolonged full-time day-care attendance and living in a rural area significantly influenced the odds of carrying nasopharyngeal respiratory pathogens, particularly in children ages 1 to 5 years. Sex, breast-feeding, passive smoking and recent upper respiratory tract infections were not significant variables. Antibiotic treatment in the previous 3 months did not affect nasopharyngeal carriage, whereas repeated treatments with a macrolide were associated with carriage of S. pneumoniae. CONCLUSIONS: Our results suggest that there is a strong and long term relationship between exposure to large numbers of children in the first years of life and nasopharyngeal carriage of all respiratory pathogens. In addition antimicrobial restrictive guidelines should be tailored to local microbiologic sceneries.

Prins J.M. et al. *Endotoxin release and cytokine production in acute and chronic meningococcaemia.* Clin Exp Immunol. 1998; 114(2) : 215-9.p Abstract: Chronic meningococcaemia is a relatively benign manifestation of meningococcal disease. Whether bacterial virulence factors are responsible for this benign course has not been studied. We compared the in vitro endotoxin-liberating ability and cytokine-inducing potential of 31 Neisseria meninigitidis isolates obtained from children with acute septic shock with that of nine isolates obtained from patients with chronic meningococcaemia and 12 isolates obtained from carriers with respiratory symptoms. The median endotoxin level released in vitro after 3 h of incubation was significantly higher for isolates causing septic shock compared with isolates from the other two groups (P=0.01 and 0.02, Mann-Whitney test). This was not explained by differences in bacterial growth rate in vitro. The median IL-6 levels in whole blood ex vivo after 4 h of incubation were also significantly lower for isolates causing chronic meningococcaemia (P=0.04, Mann-Whitney test). The endotoxin and cytokine levels measured on admission in the 31 children with acute meningococcal septic shock showed a 1000-fold variation. No relationship was established between the amount of endotoxin released by the causative microorganisms in vitro and the endotoxin or cytokine levels in the corresponding 31 children. These results suggest a diminished bacterial virulence for isolates causing chronic meningococcaemia. However, other factors than the endotoxin-releasing potential of the microorganism involved are responsible for the wide variation in endotoxin and therefore cytokine levels in patients with acute meningococcal septic shock.

Proctor R.A. et al. *Small colony variants in staphylococcal infections: diagnostic and therapeutic implications.* Clin Infect Dis. 1998; 27(3) : 419-22.p Abstract: The discovery of S. aureus small colony variants as persistent and intracellular has provided new insight into the understanding of pathogenesis associated with staphylococcal diseases. Survival advantages are afforded to SCVs on the basis of their ability to hide within host cells, which provide protection from the immune system and some antibiotics. In addition, because most clinical SCVs are defective in electron transport, their uptake of positively charged antimicrobial substances is reduced. The atypical clinical microbiologic characteristics make identification and susceptibility testing difficult. SCVs have been recovered from patients with unusually per-

sistent infections, particularly those patients with long disease-free intervals, and from patients who are chronically exposed to aminoglycosides and TMP-SMZ, suggesting that these clinical situations are those in which SCVs should be suspected and the clinical laboratory should carefully search for them.

Provenzano S.L. *[Trovafloxacin in gynecology].* Medicina (B Aires). 1999; 59 Suppl 1 : 55-61.p Abstract: Presence of microorganisms in the female lower genital tract (LGT) in concentrations that modify the established normal equilibrium produce different symptoms that make necessary to consult the gynecologist. It is currently accepted that infections of the LGT are due to microorganisms that are normally integrating the internal flora, except for the erroneously called "sexually transmitted diseases" that are caused by external microorganisms. This means that all those microorganisms usually present without causing any disease manifestations may, under certain circumstances and determined concentrations, originate or be associated to infections. Lactobacillus sp. and Corynebacterium sp. are normally the most frequent microorganisms in the vagina together with Streptococcus (aerobe), Streptococcus agalactiae and others like Enterococcus, Peptostreptococcus, Bacteroides sp., Bacteroides fragilis, Bacteroides melaninogenicus, Pseudomonas, Klebsiella, Fusobacterium, Escherichia coli. Different antibiotic schemes are proposed for different infections (bacterial vaginosis, gonococcia, chlamydial infections, pelvic inflammatory disease). They are discussed in different sections. Trovafloxacin has shown to be effective in the treatment of infections due to Chlamydia with excellent clinical results and a good tolerance. It was effective as single dose therapy in the treatment of acute gonococcia with therapeutic success in 99% of the treated patients. New fluoroquinolones are also effective in the treatment of infections due to aerobial pathogens. The use of trovafloxacin in the treatment of pelvic inflammatory disease would present great advantages: on one hand, it would cover the wide spectrum of microorganisms responsible for the infection and, on the other, would permit an early switch to oral therapy once the acute phase is over.

Provorov N.A. *[The population genetics of nodule bacteria].* Zh Obshch Biol. 2000; 61(3) : 229-57.p Abstract: The data are reviewed on the population structure and evolutionary dynamics of the nodule bacteria (rhizobia) which are among the most intensively studied microorganisms. High level of the population polymorphism was demonstrated for the rhizobia populations using the enzyme electrophoresis (MLEE profiles). The average value of Nei's coefficient of heterogeneity (H = 1 - sigma pi2 [n/(n - 1)]) were: 0.590 for rhizobia (Rhizobium, Bradyrhizobium), 0.368 for enterobacteria (Escherichia, Salmonella, Shigella) and 0.452 for pathogenic bacteria (Bordetella, Borrelia, Erysipelothrix, Haemophilus, Helicobacter, Listeria, Mycobacterium, Neisseria, Staphylococcus) populations. In spite of being devoid of the effective systems for the gene conjugative transfer, many rhizobia populations possess an essentially panmictic structure. However, the enterobacteria populations in which the gene transfer may be facilitated due to the conjugative F- and R-factors, usually display the clonal population structure. The legume host plant is proved to be a key factor that determines the high levels of polymorphism and of panmixis as well as high evolutionary rates of the symbiotic bacteria populations. The host may ensure: a) an increase in mutation and gene transfer frequencies; b) stimulation of the competitive (selective) processes in both symbiotic and free-living rhizobia populations. A "cyclic" model of the rhizobia microevolution is presented which allows to assess the inputs the interstrain competition for the saprophytic growth and for the host nodulation into evolution of a plant-associated rhizobia population. The nodulation competitiveness in the rhizobia populations is responsible for the frequency-dependent selection of the rare genotypes which may arise in the soil bacterial communities as a result of the transfer of symbiotic (sym) genes from virulent rhizobia strains to either avirulent rhizobia or to the other (saprophytic, phytopathogenic) bacteria. Therefore, the nodulation competitiveness may ensure: a) panmictic structure of the natural rhizobia populations; b) high taxonomic diversity of rhizobia which was apparently caused by a broad sym gene expansion in the soil bacterial communities. The kin selection models are presented which explain evolution of the "altruistic" (essential for the host plant, but not for the bacteria themselves) symbiotic traits (e.g., the ability for symbiotic nitrogen fixation and for differentiation into non-viable bacteroids) in the rhizobia populations. These models are based on preferential multiplication of the nitrogen-fixing clones either in planta (due to an elevated supply of the nitrogen-fixing nodules with photosynthates) or ex planta (due to a release of the rhizopines from the nitrogen-fixing nodules). Speaking generally, interactions with the host plants provide a range of mechanisms increasing a genetic heterogeneity and an evolutionary potential in the associated rhizobia populations.

Pruitt B.A. Jr et al. *Burn wound infections: current status.* World J Surg. 1998; 22(2) : 135-45.p Abstract: The burn wound represents a susceptible site for opportunistic colonization by organisms of endogenous and exogenous origin. Patient factors such as age, extent of injury, and depth of burn in combination with microbial factors such as type and number of organisms, enzyme and toxin production, and motility determine the likelihood of invasive burn wound infection. Burn wound infections can be classified on the basis of the causative organism, the depth of invasion, and the tissue response. Diagnostic procedures and therapy must be based on an understanding of the pathophysiology of the burn wound and the pathogenesis of the various forms of burn wound infection. The time-related changes in the predominant flora of the burn wound from gram-positive to gram-negative recapitulate the history of burn wound infection. Proper clinical and culture surveillance of the burn wound permits early diagnosis of gram-positive cellulitis, and the stable susceptibility of beta-hemolytic streptococci to penicillin has eliminated the threat of this once common burn wound pathogen. Selection and dissemination of intrinsic and acquired resistance mechanisms increase the probability of burn wound colonization by resistant species such as Pseudomonas aeruginosa. Even so, effective topical antimicrobial chemotherapy and early burn wound excision have significantly reduced the overall occurrence of invasive burn wound infections. Individual patients, usually those with extensive burns in whom wound closure is difficult to achieve, may still develop a variety of bacterial and nonbacterial burn wound infections. Consequently, the entirety of the burn wound must be examined on a daily basis by the attending surgeon. Any change in wound appearance, with or without associated clinical changes, should be evaluated by biopsy. Quantitative cultures of the biopsy sample may identify predominant organisms but are not useful for making the diagnosis of invasive burn wound infection. Histologic examination of the biopsy specimen, which permits staging the invasive process, is the only reliable means of differentiating wound colonization from invasive infection. Identification of the histologic changes characteristic of bacterial, fungal, and viral infections facilitates the selection of appropriate therapy. A diagnosis of invasive burn wound infection necessitates change of both local and systemic therapy and, in the case of bacterial and fungal infections, prompt surgical removal of the infected tissue. Even after the wounds of extensively burned patients have healed or been grafted, burn wound impetigo, commonly caused by Staphylococcus aureus, may occur in the form of multifocal, small superficial abscesses that require surgical debridement. Current techniques of burn wound care have significantly reduced the incidence of invasive burn wound infection, altered the organisms causing the infections that do occur, increased the interval between injury and the onset of infection, reduced the mortality associated with infection, decreased the overall incidence of infection in burn patients, and increased burn patient survival.

Pryce T.M. et al. *Identification of enterococci by ribotyping with horseradish-peroxidase-labelled 16S rDNA probes.* J Microbiol Methods. 1999; 36(3) : 147-55.p Abstract: Enterococci are frequently associated with hospital-acquired infection. Identification of enterococci using con-

ventional biochemical tests are often tedious to perform in a routine diagnostic laboratory and may give equivocal results. This study evaluates the usefulness of ribotyping by DNA hybridisation to identify 68 members of the bacterial genus Enterococcus characterised by a conventional test scheme. DNA probes (830 bp in size) were derived from the 16S rRNA gene of E. coli or E. faecalis by PCR, labelled with horseradish peroxidase and used in Southern blot hybridisations of enterococcal DNA digested with EcoRI. Unique ribotypes were obtained for 11 different species using 12 Enterococcus type strains. Ribotyping identified 44 E. faecalis isolates, 19 E. faecium isolates, two E. durans isolates and one E. avium isolate in concordance with results of the biochemistry tests. Two isolates that had ribotype patterns identical to the E. faecium type strain were unable to be definitively identified by biochemical tests. The results show that ribotyping is able to differentiate between E. faecium and E. faecalis and may be useful for identifying other enterococci in the hospital setting. In addition, ribotyping using DNA probes and enhanced chemiluminescence is a safe and more reproducible alternative to radiolabelling RNA in a clinical microbiology laboratory.

Pulimood T.B. et al. *The spectrum of antimicrobial resistance among methicillin resistant Staphylococcus aureus (MRSA) in a tertiary care centre in India.* Indian J Med Res. 1996; 103 : 212-5.p Abstract: Methicillin-resistant Staphylococcus aureus (MRSA) is a major nosocomial pathogen globally, including India. Staph. aureus strains isolated from pus or blood of patients during January 1993 to November 1994 were tested for antimicrobial susceptibility using Kirby-Bauer disc diffusion technique. Among 1382 isolates of Staph. aureus, 332 (24%) were MRSA. Among the latter, 97 per cent were resistant to trimethoprim-sulphamethoxazole; 85.5 per cent to gentamicin and 45 per cent to amikacin. While over 90 per cent were resistant to norfloxacin and ciprofloxacin, only 53 per cent were resistant to ofloxacin. Fifty seven per cent were susceptible to rifampicin and 87 per cent to netilmicin. All tested strains were susceptible to vancomycin. Therefore, when antimicrobials other than vancomycin are considered for therapy, their choice requires the results of in vitro susceptibility testing of every isolate of MRSA.

Putzker M. et al. *Community acquired diarrhea—the incidence of astrovirus infections in Germany.* Clin Lab. 2000; 46(5-6) : 269-73.p Abstract: Astroviruses are increasingly recognized as a cause of human gastroenteritis. Electron microscopy (EM) has been considered the "gold standard" method for diagnosis, but this approach is limited to a few laboratories. We evaluated a commercial enzyme immunoassay (EIA) (IDEIA Astrovirus, DAKO Diagnostika, Hamburg, Germany) for the direct detection of antigen in fecal samples. In comparison to EM, the assay scored 100% in sensitivity and specificity (n = 213; 26 positive samples) and reacted with strains representing all known serotypes. Over an 11-month period 4,211 stool samples from unselected German patients suffering from acute gastroenteritis were examined. Etiologically responsible microorganisms were found in 13.0% of cases, with astrovirus the third most common pathogen (1.2%) behind Salmonella spp. (2.9%) and Rotavirus (2.5%), representing 13.5% of all positive specimens. Norwalk-like viruses (NLV), fungi, and protozoa were not tested. In infants of < 2 years of age (n = 458) the incidence of astrovirus infection was significantly higher (2.8%) compared to children of 2-7 years of age (n = 578; 1.7%) and those of > 7 years of age (n = 3,175; 0.9%). The frequency revealed a peak in winter (mean November-February: 2.0% versus other months: 0.8%).

Puylaert J.B. et al. *Infectious ileocecitis caused by Yersinia, Campylobacter, and Salmonella: clinical, radiological and US findings.* Eur Radiol. 1997; 7(1) : 3-9.p Abstract: Yersinia, Campylobacter, and Salmonella are pathological microorganisms which incidentally may specifically infect the ileocecal area (infectious ileocecitis). In such cases pain in the right lower quadrant is the predominant symptom, and diarrhea is absent or only mild. This symptomatology can lead to an unnecessary laparotomy for suspected appendicitis. At surgery a normal appendix is removed, while there is edematous thickening of ileum and cecum, and enlarged mesenteric lymph nodes. These ileocecal abnormalities give rise to a fairly characteristic US image, enabling the radiologist to rapidly differentiate infectious ileocecitis from appendicitis, thus preventing an unnecessary laparotomy. Infectious ileocecitis caused by Yersinia, Campylobacter, and Salmonella is a common mimicker of appendicitis, and its incidence at this moment is grossly underestimated. Ultrasound is presently the only means to prevent an unnecessary operation for this condition which is principally self-limiting and innocuous.

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Qadri S.M. et al. *Activity of cefepime against nosocomial blood culture isolates.* J Antimicrob Chemother. 1995; 36(3) : 531-6.p Abstract: Cefepime is a new aminothiazolylacetamido cephalosporin with a wider spectrum and greater potency than many currently available cephalosporins. Since the blood culture isolates from patients of the study centre in Saudi Arabia are significantly more resistant to antimicrobial agents in clinical practice, we evaluated the in-vitro activity of cefepime and six other beta-lactam antibodies against 390 and 273 isolates of Gram-negative and Gram-positive bacteria, respectively. Cefepime had a broad spectrum of activity against the Enterobacteriaceae (MIC50 < 0.12 mg/L), Pseudomonas aeruginosa, Acinetobacter spp. and methicillin susceptible Staphylococcus aureus (MIC50 2.0 mg/L). The activity of cefepime was generally two-to four-fold greater than that of ceftazidime. Resistance to cefepime was most often encountered with Serratia spp. (45%), Citrobacter spp. (25%), Enterobacter cloacea (22%), and Stenotrophomonos mattophilia (45%). It had little or no activity against methicillin-resistant S. aureus and enterococci. Cefepime was highly active, with a spectrum better than ceftazidime against Gram-negative, and better than cephalothin against Gram-positive blood culture isolates.

Qazi S.A. *Antibiotic strategies for developing countries: experience with acute respiratory tract infections in Pakistan.* Clin Infect Dis. 1999; 28(2) : 214-8.p Abstract: The Pakistan program for control of acute respiratory tract infections (ARIs) adopted the standard ARI-case-management strategy of the World Health Organization and recommended co-trimoxazole for the management of nonsevere pneumonia. Reports in that country of high in vitro antimicrobial resistance of Streptococcus pneumoniae and Haemophilus influenzae to co-trimoxazole prompted the program to reevaluate its treatment policy. Two community-based studies during 1991-1993 showed in vivo efficacy of co-trimoxazole in 92% and 91% of children with nonsevere pneumonia. A third double-blind trial showed co-trimoxazole and oral amoxicillin to be equally effective in vivo in cases of nonsevere pneumonia, despite high in vitro resistance. Country-wide surveillance from 1991 to 1994 revealed 78.3%-79.9% in vitro resistance to co-trimoxazole among S. pneumoniae isolates and 59.5%-61.0% among H. influenzae isolates. Co-trimoxazole is still recommended by the Pakistan ARI control program. The fact that amoxicillin is three times more expensive and must be administered more frequently is a big impediment to recommending it as a first-line drug for nonsevere pneumonia.

Qian Y. et al. *Performance of N95 respirators: reaerosolization of bacteria and solid particles.* Am Ind Hyg Assoc J. 1997; 58(12) : 876-80.p Abstract: If a respirator does not contain an exhalation value, and the respirator wearer sneezes or coughs, one may expect previously collected particles to be reaerosolized. This may be of special concern in environments contaminated with airborne microorganisms. The percentages of reaerosolization were measured in a test setup where the number of reaerosolized particles were registered by dynamic aerosol size spectrometry relative to the number of previously collected particles or bacteria. Experiments at low relative humidity

have shown that the reaerosolization of particles below 1 micron, including Mycobacterium tuberculosis surrogate bacteria, does not exceed 0.025%, even if the re-entrainment air velocity is as high as 300 cm/sec (i.e., 37 times the air velocity through the respirator during breathing under heavy workload conditions). The reaerosolization of larger particles into dry air was significant at the highest re-entrainment velocity of 300 cm/sec, which simulates violent sneezing or coughing: 0.1% for 3 microns and about 6% for 5-micron test particles. No reaerosolization was detected at relative humidity levels exceeding 35% at these conditions. Thus, it is concluded that the reaerosolization of particles and bacteria, collected on the fibrous filters of N95 respirators, is insignificant at conditions encountered in respirator wear.

Quale J. et al. *Experience with a hospital-wide outbreak of vancomycin-resistant enterococci*. Am J Infect Control. 1996; 24(5) : 372-9.p Abstract: BACKGROUND: Vancomycin-resistant enterococci (VRE) were first detected in our institution in 1991. An outbreak was recognized in late 1992 when there was a sudden rise in the number of patients per month with VRE. Little information exists concerning the natural history of infection with these pathogens, and the effect of antimicrobial therapy is unclear. Recent guidelines emphasize prudent use of vancomycin and prompt institution of barrier precautions to limit the spread of vancomycin resistance. METHODS: Data were obtained by review of microbiologic and clinical records. Patients were categorized according to site of infection, and outcome of therapy was assessed. Hospital antibiotic usage was analyzed to determine any correlation with the outbreak. Infection control measures instituted in 1993 included patient isolation, environmental cleaning, and a reemphasis of barrier precautions. Surveillance cultures were performed to assess the extent of the outbreak in January 1995. RESULTS: VRE were detected in clinical cultures from 159 patients from 1991 through 1994. Mortality rate was 48%, but in most cases death could not be attributed to enterococcal infection. Patients with wound infections healed without specific therapy. Many patients with bacteremia had resolution with ampicillin or without specific therapy. Patients were widely scattered throughout the hospital from the beginning of the outbreak. Hospital usage of cefotaxime correlated with the number of cases. Infection control measures were not successful. Surveillance culture results in January 1995 revealed that 53% of all medical and surgical inpatients had fecal colonization with VRE. Genetic analysis of selected isolates revealed that one strain predominated, but at least seven distinct strains were identified. CONCLUSIONS: Our data suggest that many infections with VRE resolve without specific therapy. The infection control measures we used were ineffective, possibly because of the multiple strains present in our hospital. Isolation of all patients with VRE is impractical when there is widespread fecal carriage.

Quale J. et al. *Manipulation of a hospital antimicrobial formulary to control an outbreak of vancomycin-resistant enterococci*. Clin Infect Dis. 1996; 23(5) : 1020-5.p Abstract: Infection control practices are not uniformly successful in limiting outbreaks of vancomycin-resistant enterococci (VRE). Despite the implementation of barrier precautions for VRE-infected patients, nearly one-half of the inpatients at our center were found to have gastrointestinal colonization by VRE. In an attempt to control the outbreak, we altered the antibiotic formulary by restricting the use of cefotaxime and vancomycin and adding beta-lactamase inhibitors to replace third-generation cephalosporins. The use of clindamycin was also restricted because of a concomitant outbreak of Clostridium difficile colitis. After 6 months, the average monthly use of cefotaxime, ceftazidime, vancomycin, and clindamycin had decreased by 84%, 55%, 34%, and 80%, respectively (P <.02). The point prevalence of fecal colonization with VRE decreased from 47% to 15% (P <.001), and the number of patients whose clinical specimens were culture positive also gradually decreased. A change in antibiotic use appears to have significantly affected our VRE outbreak when previous measures failed.

Querol J.M. et al. *[Applications of the polymerase chain reaction (PCR) to the diagnosis of central nervous system infections]*. An Med Interna. 1996; 13(5) : 235-8.p Abstract: The utility of polymerase chain reaction (PCR) is described for the diagnosis in three patients suffering from central nervous system infections, tuberculous meningitis, herpetic encephalitis and cerebral toxoplasmosis. PCR was performed in the cerebrospinal fluid after processing the specimen by two methods, proteinase K digestion and phenol extraction of DNA. Amplification was realized using primers previously described that amplify specific DNA fragments of each microorganisms (insertion sequence IS6110 of Mycobacterium tuberculosis, B1 gene of Toxoplasma gondii, and DNA polymerase gene of Herpes simplex virus). In all three cases, PCR was positive after amplification of the specimen extracted with proteinase K, as well as when a complete DNA extraction with phenol was realized. In all cases a band of amplified products was observed in agarose gels. In conclusion, in all three patients described, PCR would had allowed the diagnosis in seven hours, and PCR should be consider a rapid sensitive and relatively simple method.

Quinn A.G. et al. *Pediatric tetracycline-induced pseudotumor cerbri*. J Aapos. 1999; 3(1) : 53-7.p Abstract: BACKGROUND: Tetracyclines have long been recognized as a cause of pseudotumor cerebri in adults, but the role of tetracyclines in the pediatric age group has not been well characterized in the literature and there have been few reported cases. We present 6 cases to better delineate the problem, the patient profile, the response to treatment, and the sequelae. METHODS: We retrospectively analyzed the records of all patients admitted with a diagnosis of pseudotumor cerebri who had documented usage of a tetracycline-class drug immediately before presentation at the Hospital For Sick Children in Toronto, Canada, from January 1, 1986, to March 1, 1996. RESULTS: Six patients (5 female, 1 male) who met all inclusion and exclusion criteria were identified; their ages ranged from 12 to 17 years. All were being treated for acne vulgaris. Duration of use before diagnosis was as short as 2 weeks and as long as 10 months, with a mean of 4.4 months. Duration of symptoms ranged from 0.57 to 4 weeks. Symptoms included headache (6 of 6), nausea (5 of 6), and diplopia (4 of 6). All for whom height and weight data were known (5 of 6) were in the upper quartile for body mass index. Visual acuity was 6/6 in all but 1 eye of one patient (6/9) at diagnosis, and final visual acuity was 6/6 in all patients. All had normal color vision, where this was recorded (5 of 6). The only recorded field defect was enlargement of the blind spot (4 of 6). All patients responded to treatment, with loss of symptoms in 1 day to 4 weeks. CONCLUSIONS: Pseudotumor cerebri as a result of tetracycline-class drugs does occur in the pediatric population. With prompt and appropriate medical treatment, long-term sequelae can almost always be avoided. Physicians who treat patients with tetracyclines need to be aware of the potential complications in children.

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Raad I. et al. *Central venous catheters coated with minocycline and rifampin for the prevention of catheter-related colonization and bloodstream infections. A randomized, double-blind trial. The Texas Medical Center Catheter Study Group.* Ann Intern Med. 1997; 127(4) : 267-74.p Abstract: BACKGROUND: Central venous catheters are a principal source of nosocomial bloodstream infections, which are difficult to control. OBJECTIVE: To determine the efficacy of catheters coated with minocycline and rifampin in preventing catheter-related colonization and bloodstream infections. DESIGN: Multicenter, randomized clinical trial. SETTING: Five university-based medical centers. PATIENTS: 281 hospitalized patients who required 298 triple-lumen, polyurethane venous catheters. INTERVENTION: 147 catheters were pretreated with tridodecylmethyl-ammonium chloride and coated with minocycline and rifampin. Untreated, uncoat-

ed catheters (n = 151) were used as controls. MEASUREMENTS: Quantitative catheter cultures, blood cultures, and molecular typing of organisms to determine catheter-related colonization and bloodstream infections. RESULTS: The group with coated catheters and the group with uncoated catheters were similar with respect to age, sex, underlying diseases, degree of immunosuppression, therapeutic interventions, and risk factors for catheter infections. Colonization occurred in 36 (26%) uncoated catheters and 11 (8%) coated catheters ($P < 0.001$). Catheter-related bloodstream infection developed in 7 patients (5%) with uncoated catheters and no patients with coated catheters ($P < 0.01$). Multivariate logistic regression analysis showed that coating catheters with minocycline and rifampin was an independent protective factor against catheter-related colonization ($P < 0.05$). No adverse effects related to the coated catheters or antimicrobial resistance were seen. An estimate showed that the use of coated catheters could save costs. CONCLUSIONS: Central venous catheters coated with minocycline and rifampin can significantly reduce the risk for catheter-related colonization and bloodstream infections. The use of these catheters may save costs.

Raad I. et al. *Intravascular catheters impregnated with antimicrobial agents: a milestone in the prevention of bloodstream infections.* Support Care Cancer. 1999; 7(6) : 386-90.p Abstract: Vascular catheters impregnated with antimicrobial agents have been shown to decrease the risk of catheter-related colonization and bloodstream infections. Various antimicrobials and antiseptics have been used. In a recent meta-analysis of 12 studies, catheters coated with chlorhexidine and silver sulfadiazine (CH/SS) were shown to be significantly less likely to be associated with catheter-related bloodstream infections than uncoated catheters. However, these catheters were coated only on the external surface and they are associated with short antimicrobial durability (3-7 days). In addition, anaphylactic reactions to them were reported in Japan. Vascular catheters impregnated with minocycline and rifampin (M/R) were found to be highly efficacious in preventing catheter-related infections. In a recent prospective, randomized trial, the likelihood of catheter-related bloodstream infections associated with the use of M/R catheters was one-twelfth of that observed with catheters coated with CH/SS. The M/R catheters are coated on the external and internal surfaces and have an antimicrobial durability of 4 weeks. Although no resistance to either minocycline or rifampin has been seen in two trials, further studies are required to determine whether the risk of resistance outweighs the benefits derived from their use. In conclusion, antimicrobial catheters have been shown to be highly cost effective in decreasing the risk of catheter-related bloodstream infection.

Radosz-Komoniewska H. et al. *[Aerobic and anaerobic bacterial flora in chronic sinusitis in adults].* Med Dosw Mikrobiol. 1997; 49(1-2) : 89-94.p Abstract: The aim of the study was to analyse microbiologically samples obtained from 30 patients aged from 21 to 73 years treated for chronic sinusitis. Aerobic bacteria only were isolated in 16 patients (53%), and anaerobic organisms only in 5 patients (17%). Mixed aerobic and anaerobic isolates were recovered from 9 patients (30%). The isolated aerobic bacteria were as follows: streptococci from the species Streptococcus salivarius, Streptococcus anginosus, Streptococcus group C, Streptococcus sanguis, Staphylococcus aureus, Gram-negative rods from the genus Haemophilus and rods from the Enterobacteriaceae family, and strains of Moraxella catarrhalis. The isolated anaerobic microorganisms Gram-negative rods from the genus Prevotella, Bacteroides, Fusobacterium, Gram-positive cocci from the genus Peptostreptococcus. Other organisms from the genus Vailonella, Eubacterium and Actinomyces were isolated less frequently. In 15 patients only one isolate was recovered, in 15 patients isolated bacteria were mixed with other microorganisms.

Radosz-Komoniewska H. et al. *[Bacterial flora in chronic inner ear infections in adults].* Med Dosw Mikrobiol. 1997; 49(1-2) : 83-7.p Abstract: The aim of the study was to analyse microbiologically middle ear exudate obtained from 56 patients, aged 17 to 83 years, treated for chronic otitis media. Aerobic bacteria only were found 49 patients (87,5%). Mixed aerobic and anaerobic isolates were recovered from 7 patients (12,5%). The most common bacteria isolated from the middle ear exudate, in descending order frequency, were Staphylococcus aureus (45%), Pseudomonas aeruginosa (34%), Proteus mirabilis (16%) and Prevotella melaninogenica (9%). Other organisms were isolated less frequently. In 34 patients only one isolate was recovered, in 22 patients the isolated bacteria coexisted with other microorganisms.

Radovanovic L.j. *[Treatment of peritonitis in patients on chronic peritoneal dialysis with a single dose of vancomycin].* Srp Arh Celok Lek. 1996; 124 Suppl 1 : 151-3.p Abstract: One dose vancomycinum was successful in treatment of peritonitis in patients undergoing chronic peritoneal dialysis if it was used after initial signs of disease immediately. Thirteen episodes of peritonitis treated in that manner were analysed. Microorganisms isolated previously were: Staphylococcus epidermidis in seven. Enterococcus in three, while no organisms were isolated in three cases. Vancomycinum was applied at the same time intravenously 0.5 g and intraperitoneally 0.5 g in the peritoneal solution for the six to eighteen hours. The treatment was successful in ten and failed in three cases with other medical complications: the tunnel infection in two and Tenckhoff catheter obstruction in one patient. The advantage of such treatment is in healing of most patients, it is cheap, the small drug dose diminishes its toxic effects and the duration of the hospital care is only one day. Anyway, it is not recommended in the treatment of patients with catheter obstruction, tunnel infection and other complications.

Raghubeer E.V. et al. *Evaluation of batch and semicontinuous application of high hydrostatic pressure on foodborne pathogens in salsa.* J Food Prot. 2000; 63(12) : 1713-8.p Abstract: The effects of high hydrostatic pressure (HPP; 545 MPa) on strains of Escherichia coli O157:H7, Listeria monocytogenes, enterotoxigenic Staphylococcus aureus, and nonpathogenic microorganisms were studied in tomato-based salsa. Products were evaluated for the survival of the inoculated pathogens following HPP treatment and after storage at 4 degrees C and 21 to 23 degrees C for up to 2 months. Inoculated samples without HPP treatment, stored under the same conditions, were also evaluated to determine the effects of the acid environment of salsa on the survival of inoculated strains. None of the inoculated pathogens were detected in the HPP-treated samples for all treatments throughout the storage period. Inoculated pathogens were detected in the non-HPP-treated samples stored at 4 degrees C after 1 month, with L. monocytogenes showing the highest level of survivors. In the non-HPP-treated samples stored at 21 to 23 degrees C, E. coli and S. aureus were not detected after 1 week, but L. monocytogenes was detected in low levels. Studies with nonpathogenic strains of the pathogens were conducted at Oregon State University using HPP treatments in a semicontinuous production system. The nonpathogenic microorganisms (E. coli, Listeria innocua, Listeria welshimeri, and nonenterotoxigenic S. aureus) were inoculated together into a feeder tank containing 100 liters of salsa. Microbiological results of samples collected before HPP treatment and from the aseptic filler were similar to those obtained for the pathogenic strains. No survivors were detected in any of the HPP-treated samples.

Ragusa M. et al. *[Central venous access systems in the oncologic patient].* Minerva Chir. 2000; 55(3) : 139-46.p Abstract: BACKGROUND: A safe and dependable venous access is mandatory in order to perform cancer chemotherapy and monitor blood values in the neoplastic patient. Prolonged infusions of medications with sclerosing action may damage the vessel wall, inducing chemical thrombophlebitis. Furthermore, extravasation of necrotizing compounds may be a danger to the patient. The application of totally implantable venous access systems (VAS) started in 1982, in the United States of America, where at present 500,000 devices are implanted annually. In Italy such method has been introduced in a later period, with a constantly growing trend. VAS devices have evolved since their first

presentation, and so have application techniques: the original surgical route has been supported by the percutaneous one, considered most appropriate by several Centers. In this study, personal experience concerning application of VAS in cancer patients is presented. METHODS: From July 1994 to February 1998, at the General Thoracic Surgery Dept. of the University of Perugia, 198 VAS have been implanted in 195 patients. During the first period all the systems have been applied by surgical cutdown of the cephalic vein (150 cases). In the last 12 month the percutaneous technique for vein puncture has been adopted in 48 patients. RESULTS: Immediate and late complications have occurred: among the former, pneumothorax, hematoma, malposition; among the latter, infection, subclavian vein thrombosis, catheter rupture. The results are analysed after an extensive review of the international literature; pros and cons of the different implantation techniques and the technical aspects useful for preventing complications are underlined.

Rains C.P. et al. *Ceftazidime. An update of its antibacterial activity, pharmacokinetic properties and therapeutic efficacy.* Drugs. 1995; 49(4) : 577-617.p Abstract: Ceftazidime is a third generation cephalosporin antibacterial agent which, since its introduction in the early 1980s, has retained a broad spectrum of in vitro antimicrobial activity and clinical utility in serious infections. However, increasing resistance to ceftazidime and other third generation cephalosporins, particularly among Enterobacteriaceae, due to the emergence of plasmid-mediated extended spectrum beta-lactamases and the class I chromosomally mediated beta-lactamases, is of concern. There is now a wealth of information on the pharmacokinetics of the drug. enabling ceftazidime to be used predictably, and with a low potential for adverse effects, in a diversity of patient populations. Overall, ceftazidime remains an effective agent for the treatment of serious infection, particularly those due to major nosocomial pathogens, and respiratory infections in patients with cystic fibrosis. Ceftazidime-containing regimens also remain an important option for the empirical therapy of febrile episodes in neutropenic patients. The tolerability profile of ceftazidime makes the drug a useful option in seriously ill patients who are at risk of developing adverse events with other antibacterial agents. Although patterns of bacterial resistance have changed in the ensuing years since its introduction, judicious use of this important agent will help maintain its present clinical utility.

Rajek A. et al. *Core cooling by central venous infusion of ice-cold (4 degrees C and 20 degrees C) fluid: isolation of core and peripheral thermal compartments.* Anesthesiology. 2000; 93(3) : 629-37.p Abstract: BACKGROUND: Central venous infusion of cold fluid may be a useful method of inducing therapeutic hypothermia. The aim of this study was to quantify systemic heat balance and regional distribution of body heat during and after central infusion of cold fluid. METHODS: The authors studied nine volunteers, each on two separate days. Anesthesia was maintained with use of isoflurane, and on each day 40 ml/kg saline was infused centrally over 30 min. On one day, the fluid was 20 degrees C and on the other it was 4 degrees C. By use of a tympanic membrane probe core (trunk and head) temperature and heat content were evaluated. Peripheral compartment (arm and leg) temperature and heat content were estimated with use of fourth-order regressions and integration over volume from 18 intramuscular thermocouples, nine skin temperatures, and "deep" hand and foot temperature. Oxygen consumption and cutaneous heat flux estimated systemic heat balance. RESULTS: After 30-min infusion of 4 degrees C or 20 degrees C fluid, core temperature decreased 2.5 +/- 0.4 degrees C and 1.4 +/- 0.2 degrees C, respectively. This reduction in core temperature was 0.8 degrees C and 0.4 degrees C more than would be expected if the change in body heat content were distributed in proportion to body mass. Reduced core temperature resulted from three factors: (1) 10-20% because cutaneous heat loss exceeded metabolic heat production; (2) 50-55% from the systemic effects of the cold fluid per se; and (3) approximately 30% because the reduction in core heat content remained partially constrained to core tissues. The postinfusion period was associated with a rapid and spontaneous recovery of core temperature. This increase in core temperature was not associated with a peripheral-to-core redistribution of body heat because core temperature remained warmer than peripheral tissues even at the end of the infusion. Instead, it resulted from constraint of metabolic heat to the core thermal compartment. CONCLUSIONS: Central venous infusion of cold fluid decreases core temperature more than would be expected were the reduction in body heat content proportionately distributed. It thus appears to be an effective method of rapidly inducing therapeutic hypothermia. When the infusion is complete, there is a spontaneous partial recovery in core temperature that facilitates rewarming to normothermia.

Ram S. et al. *Prevalence of multidrug resistant organisms in an intensive care burn unit.* Indian J Med Res. 2000; 111 : 118-20.p Abstract: During January to December, 1998, analysis of an outbreak of infections in the burn intensive care unit (BICU) of the hospital attached to the Dayanand Medical College, Ludhiana was carried out. A total of 868 clinical samples from 290 patients with more than 40 per cent thermal injury were investigated. These samples included 322 wound swabs, 325 blood and 221 urine samples. Bacterial pathogens were isolated from 80, 62 and 48 per cent samples of pus, blood and urine respectively. Among the nine different pathogens isolated, the more common were Pseudomona aeruginosa from pus, Staphylococcus aureus from blood and Escherichia coli from urine samples. Multidrug resistance was observed among these predominant pathogens. Identical drug susceptibility pattern was depicted by large number of isolates of Ps. aeruginosa, Staph. aureus, Esch. coli and Proteus mirabilis. Similar pathogens with identical drug sensitivity pattern were isolated from environmental samples of the BICU. The ongoing outbreak of hospital acquired infection (HAI) was significantly reduced after strictly adhering to the guidelines for control of HAI.

Ramaswamy S. et al. *Molecular genetic basis of antimicrobial agent resistance in Mycobacterium tuberculosis: 1998 update.* Tuber Lung Dis. 1998; 79(1) : 3-29.p Abstract : Knowledge of the molecular genetic basis of resistance to antituberculous agents has advanced rapidly since we reviewed this topic 3 years ago. Virtually all isolates resistant to rifampin and related rifamycins have a mutation that alters the sequence of a 27-amino-acid region of the beta subunit of ribonucleic acid (RNA) polymerase. Resistance to isoniazid (INH) is more complex. Many resistant organisms have mutations in the katG gene encoding catalase-peroxidase that result in altered enzyme structure. These structural changes apparently result in decreased conversion of INH to a biologically active form. Some INH-resistant organisms also have mutations in the inhA locus or a recently characterized gene (kasA) encoding a beta-ketoacyl-acyl carrier protein synthase. Streptomycin resistance is due mainly to mutations in the 16S rRNA gene or the rpsL gene encoding ribosomal protein S12. Resistance to pyrazinamide in the great majority of organisms is caused by mutations in the gene (pncA) encoding pyrazinamidase that result in diminished enzyme activity. Ethambutol resistance in approximately 60% of organisms is due to amino acid replacements at position 306 of an arabinosyltransferase encoded by the embB gene. Amino acid changes in the A subunit of deoxyribonucleic acid gyrase cause fluoroquinolone resistance in most organisms. Kanamycin resistance is due to nucleotide substitutions in the rrs gene encoding 16S rRNA. Multidrug resistant strains arise by sequential accumulation of resistance mutations for individual drugs. Limited evidence exists indicating that some drug resistant strains with mutations that severely alter catalase-peroxidase activity are less virulent in animal models. A diverse array of strategies is available to assist in rapid detection of drug resistance-associated gene mutations. Although remarkable advances have been made, much remains to be learned about the molecular genetic basis of drug resistance in Mycobacterium tuberculosis. It is reasonable to believe that development of new therapeutics based on knowledge obtained from the study of the molecular mechanisms of resistance will occur.

Rambaldi M. et al. *Infective endocarditis presenting as polyarthritis.* Clin Rheumatol. 1998; 17(6) : 518-20.p Abstract: We report the case of a patient who complained of arthralgias and arthritis 1 month before the onset of fever or other signs of infective endocarditis. In 2 months she developed an additive, asymmetrical polyarthritis with fever (febrile polyarthritis). Splenomegaly was present. Two-dimensional echocardiography showed no vegetations or other findings suggesting endocardial involvement. Initially, four blood cultures showed no microorganisms, then six of nine subsequent blood cultures grew highly gentamicin-resistant Enterococcus faecalis.

Ramon-Maiques S. et al. *The 1.5 A resolution crystal structure of the carbamate kinase-like carbamoyl phosphate synthetase from the hyperthermophilic Archaeon pyrococcus furiosus, bound to ADP, confirms that this thermostable enzyme is a carbamate kinase, and provides insight into substrate binding and stability in carbamate kinases.* J Mol Biol. 2000; 299(2) : 463-76.p Abstract: Carbamoyl phosphate (CP), an essential precursor of arginine and the pyrimidine bases, is synthesized by CP synthetase (CPS) in three steps. The last step, the phosphorylation of carbamate, is also catalyzed by carbamate kinase (CK), an enzyme used by microorganisms to produce ATP from ADP and CP. Although the recently determined structures of CPS and CK show no obvious mutual similarities, a CK-like CPS reported in hyperthermophilic archaea was postulated to be a missing link in the evolution of CP biosynthesis. The 1.5 A resolution structure of this enzyme from Pyrococcus furiosus shows both a subunit topology and a homodimeric molecular organization, with a 16-stranded open beta-sheet core surrounded by alpha-helices, similar to those in CK. However, the pyrococcal enzyme exhibits many solvent-accessible ion-pairs, an extensive, strongly hydrophobic, intersubunit surface, and presents a bound ADP molecule, which does not dissociate at 22 degrees C from the enzyme. The ADP nucleotide is sequestered in a ridge formed over the C-edge of the core sheet, at the bottom of a large cavity, with the purine ring enclosed in a pocket specific for adenine. Overall, the enzyme structure is ill-suited for catalyzing the characteristic three-step reaction of CPS and supports the view that the CK-like CPS is in fact a highly thermostable and very slow (at 37 degrees C) CK that, in the extreme environment of P. furiosus, may have the new function of making, rather than using, CP. The thermostability of the enzyme may result from the extension of the hydrophobic intersubunit contacts and from the large number of exposed ion-pairs, some of which form ion-pair networks across several secondary structure elements in each enzyme subunit. The structure provides the first information on substrate binding and catalysis in CKs, and suggests that the slow rate at 37 degrees C is possibly a consequence of slow product dissociation. Copyright 2000 Academic Press.

Ramos J.M. et al. *Changes in susceptibility of Salmonella enteritidis, Salmonella typhimurium, and Salmonella virchow to six antimicrobial agents in a Spanish hospital, 1980-1994.* Eur J Clin Microbiol Infect Dis. 1996; 15(1) : 85-8.p Abstract: To determine changes in the susceptibility patterns of Salmonella enteritidis, Salmonella typhimurium, and Salmonella virchow over time, resistance to ampicillin, chloramphenicol, tetracycline, gentamicin, trimethoprim/sulfamethoxazole, and nalidixic acid was studied by the disk diffusion method in 1,024, 191, and 61 clinical isolates of these organisms, respectively. All isolates were recovered from 1980 to 1994 at a hospital in Madrid, Spain. Salmonella enteritidis isolates were less resistant (10.9%) than Salmonella typhimurium (43.5%) and Salmonella virchow (36.1%; $p < 0.001$). The incidence of resistance of Salmonella enteritidis to ampicillin increased from 2.7% during the period 1980-1982 to 15.6% during 1992-1994 ($p < 0.001$). The resistance of Salmonella typhimurium to ampicillin, chloramphenicol, and tetracycline increased from 15.2%, 7.6%, and 21.2% respectively in 1980-1982 to 73.3%, 46.7%, and 73.3% in 1992-1994 ($p < 0.001$). These marked increases in antimicrobial resistance suggest the need for public health interventions, several of which are discussed.

Ramos M. et al. *Reduction of endogenous bacteria associated with catfish fillets using the Grovac process.* J Food Prot. 2000; 63(9) : 1231-9.p Abstract: Fresh catfish (Ictalurus punctatus) fillets are known to be contaminated with a large number of spoilage and pathogenic bacteria. The Grovac method, a new patented (U.S. 5,543,163) process, was evaluated for its efficacy in reducing the number of pathogens and spoilage microorganisms associated with food. This process involves using a processing solution containing ascorbic acid (AA) and sodium chloride (NaCl), vacuum, and tumbling. A total of 51 bacterial isolates were isolated and identified from whole catfish and catfish fillets using both selective and nonselective media, phenotypic tests, and the Vitek identification system. Psychrotrophic foodborne pathogens included: Aeromonas hydrophila, Escherichia coli, Listeria sp., Plesiomonas shigelloides, Proteus sp., Staphylococcus aureus, and Vibrio parahaemolyticus. High aerobic plate counts (2.6 x 10(7) CFU/g) for catfish fillets indicated that fillets were heavily contaminated during processing of catfish. The Grovac process showed that various treatment combinations of AA and NaCl resulted in a 1.2 to 2.3 CFU/g log reduction of microbial counts associated with catfish fillets. The effectiveness of the process may be related to the synergistic effect of tumbling, AA, NaCl, and vacuum. These results suggested that the Grovac process could be used as an alternative processing procedure to reduce microbial populations associated with catfish fillets and may be useful to improve the shelf-life and food safety of the product. Microbiological data from this study will be used for the development of a hazard analysis for the implementation of the hazard analysis critical control point program for processed catfish fillets.

Ramos R.L. et al. *Emergence of mupirocin resistance in multiresistant Staphylococcus aureus clinical isolates belonging to Brazilian epidemic clone III::B:A.* J Med Microbiol. 1999; 48(3) : 303-7.p Abstract: Mupirocin is a topical antimicrobial agent that has been successfully used to eradicate methicillin-resistant Staphylococcus aureus from the anterior nares and other sites of patients and health care personnel. This report describes the acquisition of a novel mupirocin resistance gene (ileS) by an epidemic MRSA clone that is geographically widespread in Brazil.

Ramphal R. et al. *Comparison of the activity of two broad-spectrum cephalosporins tested against 2,299 strains of Pseudomonas aeruginosa isolated at 38 North American medical centers participating in the SENTRY Antimicrobial Surveillance Program, 1997-1998.* Diagn Microbiol Infect Dis. 2000; 36(2) : 125-9.p Abstract: Pseudomonas aeruginosa is an important nosocomial pathogen. Resistance to certain beta-lactam antimicrobial agents among P. aeruginosa is increasing. The SENTRY Antimicrobial Surveillance Program was designed to employ a network of hospitals in the United States, Canada, Latin America, and Europe to monitor the predominant bacterial and fungal pathogens and antimicrobial susceptibility patterns associated with community-acquired and nosocomial bloodstream, respiratory tract, wound, and urinary tract infections. The purpose of this analysis of SENTRY results was to extract information on the current North American susceptibility pattern of P. aeruginosa for two antipseudomonal cephalosporins, ceftazidime, and cefepime. Clinical isolates were provided by 30 centers in the United States (grouped into five regions) and eight centers in Canada. Susceptibility testing was performed at a central reference laboratory by using broth microdilution methods and interpretive criteria specified by the National Committee for Clinical Laboratory Standards. Of the 34, 530 North American bacterial isolates tested during 1997 and 1998, 2299 (6.7%) were P. aeruginosa. There were no substantial differences in regional rates of P. aeruginosa susceptibility to ceftazidime (range 78.8-81.9%) or cefepime (range 80.0-83.4%) The percentage of resistant isolates among the 1784 United States isolates was 13.3% for ceftazidime versus 7.1% for cefepime ($p < 0.05$). It is essential to continue surveillance of the in vitro efficacy of these and other beta-lactam agents against P. aeruginosa because of the clinical importance of these safe and broad-spectrum cephems used alone or in combination in current clinical practice.

Ranchere J.Y. et al. *[Staphylococcus nasal carriage and infection of central venous ports in oncology].* Ann Fr Anesth Reanim. 2000; 19(2) : 93-5.p Abstract: OBJECTIVE: To assess the risk of infection of either subcutaneously implanted central venous access devices or percutaneous central venous catheters inserted via a subcutaneous tunnel in cancer patients with a positive staphylococcal nasal carriage. STUDY DESIGN: Prospective study. PATIENTS: The study included 266 patients undergoing cancer chemotherapy. METHOD: A nasal swab was taken prior to insertion of the venous access device and the patients were followed over 30 days for the occurrence of a staphylococcal infection (hemoculture and device or site of insertion). RESULTS: A nasal staphylococcal nasal carriage was found in 227 patients. Out of the 15 developing a device infection, a staphylococcal nasal colonization was existing in nine patients. Bacteriological screening a sensitivity of 60% and a specificity of 13%. CONCLUSION: Bacteriological screening at the time of device insertion of a central venous access device is of no value for the detection of patients at risk of staphylococcal infection of the device.

Rand T. et al. *["Lines and tubes" in neonatal intensive care patients].* Radiologe. 2000; 40(1) : 52-7.p Abstract: BACKGROUND: Central catheters in neonatological intensive care patients are used for the prolonged application of medication or parenteral infusions. Dislocations and septic and thromboembolic complications may occur. CONTROL OF POSITION: Radiologically, the correct position of the catheter must be proven. Dislocations or complications associated with central catheters must be diagnosed. For catheter monitoring plain film radiographs are the first line of investigation; however, sonography may be of additional assistance. Angiographic techniques should only be performed when conventional noninvasive methods do not supply satisfactory results. Special knowledge is necessary for monitoring catheters that are set via the umbilical artery or vein. The radiological applications for catheter monitoring in the neonate intensive care unit are discussed in this article.

Rangel-Frausto M.S. et al. *[Evaluation of a nosocomial infection surveillance program].* Salud Publica Mex. 1999; 41 Suppl 1 : S59-63.p Abstract: OBJECTIVE: To validate the nosocomial infections surveillance system, establish its impact in morbi-mortality. MATERIAL AND METHODS: Surveillance of every single patient admitted during a one month period was done by one of us (DMG). Each possible case was discussed with two other hospital epidemiologists (SPLR, MSRF). This intensive surveillance was compared against the routinely surveillance performed by the nurses. We included all hospitalized patients between 11th July and 12th of August according to CDC (Atlanta, GA) nosocomial infections definitions. Patients were followed everyday and information about age, gender, underlying diagnosis, microorganisms responsible for nosocomial infections, hospital length of stay and mortality. RESULTS: During the study period 429 were admitted, 45 developed a nosocomial infection (cases) and 384 did not (controls). The incidence of nosocomial infections was 10.48 cases/100 discharges. The sensitivity and specificity of the surveillance system was 95.3 and 98.7%, respectively. Mortality in infected was 11.11% and in non infected was 2.4%. The average length of stay was 20 and 11 days for cases and non infected respectively ($p < 0.01$). Urinary tract infections were the most common NI (42%), secondary bacteremia (14 < or = %), pneumonia (11.11%) and deep surgical site infection (9.25%). The surgical wound infection rates were: 1.3%, 1.9% and 1.9% for clean, clean-contaminated and contaminated wounds. Patients with rapidly fatal diseases had an increased frequency of infections. The microorganisms most commonly isolated were Escherichia coli (28%), Staphylococcus aureus (11.11%), and Pseudomonas aeruginosa (8.6%). The level of antibiotic resistance was in average of 43% for those antibiotics tested. CONCLUSIONS: The sensitivity and specificity of the surveillance system was excellent. Patients with nosocomial infections had an increased length of stay and a higher mortality compared to those without NI. The validation of the surveillance system allows the production of trustable conclusions about nosocomial infections.

Rankine J.J. et al. *Diagnosis of pneumothorax in critically ill adults.* Postgrad Med J. 2000; 76(897) : 399-404.p Abstract: The diagnosis of pneumothorax is established from the patients' history, physical examination and, where possible, by radiological investigations. Adult respiratory distress syndrome, pneumonia, and trauma are important predictors of pneumothorax, as are various practical procedures including mechanical ventilation, central line insertion, and surgical procedures in the thorax, head, and neck and abdomen. Examination should include an inspection of the ventilator observations and chest drainage systems as well as the patient's cardiovascular and respiratory systems. Radiological diagnosis is normally confined to plain frontal radiographs in the critically ill patient, although lateral images and computed tomography are also important. Situations are described where an abnormal lucency or an apparent lung edge may be confused with a pneumothorax. These may arise from outside the thoracic cavity or from lung abnormalities or abdominal viscera inside the chest.

Rantala H. et al. *Immunoglobulin-coated bacteria in effusions obtained during chronic maxillary sinusitis.* Acta Otolaryngol Suppl. 1997; 529 : 158-61.p Abstract: Local protection of the maxillary sinuses against bacterial invasion takes both specific and non-specific forms. The present study is intended to evaluate the participation of the specific protective factors, immunoglobulins IgG, secretory IgA, IgM and complement, in protecting the maxillary sinuses during chronic maxillary sinusitis (CMS). We collected 47 sinus effusion samples from 37 patients (17 male, 20 female) with current CMS of at least 3 months' duration. Patients' ages ranged from 3 to 80 years. The effusion material was subjected to qualitative and quantitative bacteriological analyses, while bacterial coating with IgG, SIgA, IgM and C3b was determined using an immunofluorescence technique. Detectable bacteria were harboured by 55% of the samples, the most common species being Moraxella catarrhalis, Streptococcus pneumoniae and Staphylococcus aureus. The bacterial counts ranged from 0 to 10(9) per ml effusion. Half of the samples hosting detectable bacteria showed microorganisms coated with protective immunoglobulins. Antibacterial factors had completely eradicated the microorganisms in 45% of the CMS cases and coated the organisms with specific immunoglobulins in a further 28%.

Rasheed J.K. et al. *Evolution of extended-spectrum beta-lactam resistance (SHV-8) in a strain of Escherichia coli during multiple episodes of bacteremia.* Antimicrob Agents Chemother. 1997; 41(3) : 647-53.p Abstract: Nine isolates of Escherichia coli were recovered from seven blood cultures over a period of 3 months from a 19-month-old female with aplastic anemia. Initial isolates were susceptible to extended-spectrum cephalosporins, including ceftazidime (MIC, < or = 0.25 microgram/ml), but gradually became resistant to this drug (MICs, > or = 128 micrograms/ml) and other cephalosporins and the monobactam aztreonam. Molecular typing methods, including plasmid profile analysis, pulsed-field gel electrophoresis, and arbitrarily primed PCR, indicated that the nine isolates were derived from a common ancestor. Dot blot hybridization and PCR analysis of total bacterial DNA using blaSHV- and blaTEM-specific DNA probes and primers identified the presence of a blaTEM beta-lactamase gene in all of the isolates and a blaSHV gene in the isolates with elevated ceftazidime MICs. Isoelectric focusing analysis of crude lysates showed that all nine isolates contained an enzyme with a pI of 5.4 corresponding to the TEM-1 beta-lactamase, and those isolates containing an SHV-type beta-lactamase demonstrated an additional band with a pI of 7.6. The first of the ceftazidime-resistant isolates appeared to hyperproduce the SHV enzyme compared to the other resistant isolates. DNA sequencing revealed a blaSHV-1 gene in the first ceftazidime-resistant isolate and a novel blaSHV gene, blaSHV-8, with an Asp-to-Asn substitution at amino acid position 179 in the remaining four isolates. Three of the ceftazidime-

resistant isolates also showed a change in porin profile. The patient had received multiple courses of antimicrobial agents during her illness, including multiple courses of ceftazidime. This collection of blood isolates from the same patient appears to represent the in vivo evolution of resistance under selective pressure of treatment with various cephalosporins.

Rasmussen B.A. et al. *Antimicrobial resistance in anaerobes.* Clin Infect Dis. 1997; 24 Suppl 1 : S110-20.p Abstract: The development of antibiotic resistance in anaerobic bacteria has a tremendous impact on the selection of antimicrobial agents for empirical therapy. Susceptibility studies have documented the emergence of antimicrobial resistance and indicate distinct differences in resistance patterns related to individual hospitals, geographic regions, and antibiotic-prescribing regimens. Resistance to beta-lactam drugs, clindamycin, tetracyclines, and 5-nitroimidazoles (metronidazole) has been observed. The prime mechanism for resistance to beta-lactam agents is the production of beta-lactamases. Resistance to clindamycin is mediated by modification of the ribosome. Tetracycline resistance is mediated by both tetracycline efflux and ribosomal protection. 5-Nitroimidazole resistance appears to be caused by a combination of decreased antibiotic uptake and decreased nitroreductase activity. The level of chloramphenicol susceptibility remains quite high, whereas uniform resistance to aminoglycosides and quinolones is observed. Understanding the mechanisms of resistance is critical for both informed selection of antimicrobial therapy and the design of new antimicrobial agents.

Rasmussen M. et al. *Protein GRAB of streptococcus pyogenes regulates proteolysis at the bacterial surface by binding alpha2-macroglobulin.* J Biol Chem. 1999; 274(22) : 15336-44.p Abstract: In the molecular interplay between pathogenic microorganisms and their host, proteolytic mechanisms are believed to play a crucial role. Here we find that the important human pathogen Streptococcus pyogenes (group A Streptococcus) expresses a surface protein with high affinity (Ka = 2.0 x 10(8) M-1) for alpha2-macroglobulin (alpha2M), the dominating proteinase inhibitor of human plasma. The immunoglobulin-binding protein G of group C and G streptococci also contains an alpha2M-binding domain and a gene encoding protein GRAB (protein G-related alpha2M-binding protein) was identified in the S. pyogenes Genome Sequencing data base. The grab gene is present in most S. pyogenes strains and is well conserved. Protein GRAB has typical features of a surface-attached protein of Gram-positive bacteria. It also contains a region homologous to parts of the alpha2M-binding domain of protein G and a variable number of a unique 28-amino acid-long repeat. Using Escherichia coli-produced protein GRAB and synthetic GRAB peptides, the alpha2M-binding region was mapped to the NH2-terminal part of protein GRAB, which is the region with homology to protein G. An isogenic S. pyogenes mutant lacking surface-associated protein GRAB showed no alpha2M binding activity and was attenuated in virulence when injected intraperitoneally in mice. Finally, alpha2M bound to the bacterial surface via protein GRAB was found to entrap and inhibit the activity of both S. pyogenes and host proteinases, thereby protecting important virulence determinants from proteolytic degradation. This regulation of proteolytic activity at the bacterial surface should affect the host-microbe relation during S. pyogenes infections.

Rasmussen S.R. et al. *Associations of Streptococcus suis serotype 2 ribotype profiles with clinical disease and antimicrobial resistance.* J Clin Microbiol. 1999; 37(2) : 404-8.p Abstract: A total of 122 Streptococcus suis serotype 2 strains were characterized thoroughly by comparing clinical and pathological observations, ribotype profiles, and antimicrobial resistance. Twenty-one different ribotype profiles were found and compared by cluster analysis, resulting in the identification of three ribotype clusters. A total of 58% of all strains investigated were of two ribotypes belonging to different ribotype clusters. A remarkable relationship existed between the observed ribotype profiles and the clinical-pathological observations because strains of one of the two dominant ribotypes were almost exclusively isolated from pigs with meningitis, while strains of the other dominant ribotype were never associated with meningitis. This second ribotype was isolated only from pigs with pneumonia, endocarditis, pericarditis, or septicemia. Cluster analysis revealed that strains belonging to the same ribotype cluster as one of the dominant ribotypes came from pigs that showed clinical signs similar to those of pigs infected with strains with the respective dominant ribotype profiles. Furthermore, strains belonging to different ribotype clusters had totally different patterns of resistance to antibiotics because strains isolated from pigs with meningitis were resistant to sulfamethazoxazole and strains isolated from pigs with pneumonia, endocarditis, pericarditis, or septicemia were resistant to tetracycline.

Rastawicki W. et al. *[Susceptibility to selected antibiotics of Yersinia enterocolitica 03 strains, carrying and not carrying plasmid pYV].* Med Dosw Mikrobiol. 1999; 51(3-4) : 331-7.p Abstract: A total of 199 clinical strains of Yersinia enterocolitica serotype O3, biotype 4 were tested for their susceptibility to antibiotics (158 strains carried the virulence plasmid pYV and 41 strains did not). 114 isolates were tested by standard disk diffusion method for 21 antibiotics. Almost all tested strains were resistant to ampicillin and cefazolin and susceptible to amoxycillin/clavulanate, cefaclor, cefamandole, cefuroxime, cefotaxime, ceftriaxone, aztreonam, imipenem, gentamicin, amikacin, netilmicin, tetracycline, doxycycline, chloramphenicol, ciprofloxacin, sulphamethoxazole, co-trimoxazole, trimethoprim and furazolidone. In addition minimal inhibitory concentrations (MICs) of 15 antibiotics were determined by agar dilution method for all 199 strains (158 plasmid positive and 41 strains plasmid negative). Third-generation cephalosporins such as cefotaxime and ceftriaxone and a fluoroquinolone (ciprofloxacin) were the most active antimicrobial agents, tested followed by aztreonam, imipenem, trimethoprim, tetracycline, gentamicin, chloramphenicol, amoxycillin/clavulanate, cefaclor, cefuroxime, amikacin, furazolidone and sulphamethoxazole. The present study demonstrated a high susceptibility of clinical strains of Y. enterocolitica to most of the tested antibiotics. In general, there was no significant difference between susceptibility of virulence plasmid pYV positive and virulence plasmid negative strains to antibacterial agents.

Rastogi N. et al. *In vitro activities of fourteen antimicrobial agents against drug susceptible and resistant clinical isolates of Mycobacterium tuberculosis and comparative intracellular activities against the virulent H37Rv strain in human macrophages.* Curr Microbiol. 1996; 33(3) : 167-75.p Abstract: Minimal inhibitory concentrations (MICs) of 14 first and second-line antituberculous drugs against drug-susceptible and drug-resistant clinical isolates of Mycobacterium tuberculosis (including the multiple drug-resistant or MDR-TB isolates), as well as the type strain H37Rv, were determined radiometrically by the Bactec 460-TB methodols. MICs (microg/ml) of all the fourteen drugs were within an extremely narrow range in case of susceptible strains; isoniazid (0. 02-0.04), rifampin (0.2-0.4), ethambutol and streptomycin (0.5-2.0), ethionamide (0.25-0.5), D-cycloserine (25-75), capreomycin (1-2), kanamycin (2-4), amikacin (0.5-1.0), clofazimine (0.1-0.4), ofloxacin (0.5-1.0), ciprofloxacin (0.25-1.0), and sparfloxacin (0.1-0.4). The activity of second-line drugs remained unaltered against MDR-TB isolates resistant to routine first-line drugs. With peak serum level concentrations (Cmax), the intracellular killing of the virulent H37Rv strain was studied in detail in cultured human macrophages. Based on an decreasing order of bactericidal activity, our results showed the following spectrum of intracellular drug action: among the first-line drugs, rifampin > ethionamide = isoniazid > ethambutol > streptomycin > D-cycloserine; among second-line drugs, clofazimine = amikacin > kanamycin = capreomycin; among fluoroquinolones, sparfloxacin > ofloxacin > ciprofloxacin. On the other hand, contrary to atypical mycobacteria, the macrolide drug clarithromycin was inactive against both extracellular and intracellular M. tuberculosis.

Raszka W.V. Jr et al. *Isolation of nontuberculous, non-avium mycobacteria from patients infected with human immunodeficiency virus.* Clin Infect Dis. 1995; 20(1) : 73-6.p Abstract: Mycobacterium avium serovars account for 97% of typeable M. avium complex (MAC) organisms causing infection in patients with AIDS. We reviewed 216 consecutive cultures that yielded nontuberculous mycobacteria (NTM) from 212 patients. Only the first isolate of each species of NTM recovered from each patient was analyzed in the study. Among the 92 patients infected with the human immunodeficiency virus, 96 NTM organisms were identified; M. avium was recovered from 50 (77%) of the 65 NTM-positive cultures of blood or bone marrow, while Mycobacterium intracellular and other non-avium NTM accounted for 18% and 5% of the isolates, respectively. Little difference in the susceptibility of isolates to antibiotics was noted between HIV-positive and HIV-negative patients or between M. avium and M. intracellulare. These data demonstrate that HIV-positive patients develop disseminated disease with NTM other than M. avium more frequently than has been previously reported and that these patients do not appear to be infected with NTM that are more resistant to antimicrobial agents than are NTM isolated from HIV-negative patients.

Rath P.M. et al. *Value of environmental sampling and molecular typing of aspergilli to assess nosocomial sources of aspergillosis.* J Hosp Infect. 1997; 37(1) : 47-53.p Abstract: In order to investigate the risk of hospital-acquired infections due to environmental Aspergillus, air sampling outside and inside the bone marrow transplantation (BMT) clinic of the University Hospital, Essen, Germany, was performed prospectively for one year. The spore concentration in the air was matched with meteorological data. Two BMT-patients, who were hospitalized during the sampling period, suffered from aspergillosis after discharge. The patients' isolates obtained at re-admission were compared with environmental isolates obtained during the first hospitalization. Analysis by randomly amplified polymorphic DNA showed that the two BMT-patients were infected with Aspergillus strains that were different from the environmental strains. It is concluded that it is not possible to predict the environmental Aspergillus spore concentration by analysis of meteorological data. Since the concentration of specific strains may fluctuate rapidly, a hospital-acquired Aspergillus infection cannot be excluded even if the infecting strain is not found in the hospital environment.

Rautio M. et al. *Bacteriology of histopathologically defined appendicitis in children.* Pediatr Infect Dis J. 2000; 19(11) : 1078-83.p Abstract: BACKGROUND: Acute appendicitis is the most common surgical emergency in childhood. However, the pathogenesis and detailed microbiology are obscure. OBJECTIVE: To determine in detail the bacterial etiology of appendicitis in children in relation to the histologic tissue pathology. STUDY DESIGN: Tissue samples obtained at surgery from 41 children with suspected acute appendicitis were examined histologically and by culture for aerobic and anaerobic bacteria. The patients were analyzed according to histopathologic and clinical findings. RESULTS: Aerobic and anaerobic species were isolated from 40 of 41 (98%) samples; on average, 14.1 isolates per specimen (10.4 anaerobes and 3.7 aerobes). Specimens from patients with gangrenous appendices yielded significantly higher numbers of anaerobic isolates per specimen than did specimens from patients with healthy appendices (11.7 vs. 7.7; $P < 0.01$). Bacteria belonging to the Bacteroides fragilis group were the most frequently isolated anaerobic microorganisms (95%). Other organisms frequently isolated in all histology groups were Peptostreptococcus micros (66%), Bilophila wadsworthia (63%), Fusobacterium nucleatum (44%), Eggerthella lenta (44%) and a hitherto undescribed bile-resistant, pigment-producing Gram-negative rod (41%). Of the aerobes Escherichia coli (88%) and Streptococcus anginosus group (former Streptococcus "milleri" group) organisms (61%) were the most frequent findings. CONCLUSIONS: The shift from histologically normal toward gangrenous appendices was clearly associated with markedly elevated anaerobic bacterial counts in terms of species. The unusually high frequencies of B. wadsworthia (75%) and the hitherto undescribed bile-resistant, pigment-producing Gram-negative rod (56%) in gangrenous appendices represent unique and different findings from those reported in adults.

Rauws E.A. et al. *Current guidelines for the eradication of Helicobacter pylori in peptic ulcer disease.* Drugs. 1995; 50(6) : 984-90.p Abstract: Pharmacological suppression of gastric acid secretion has traditionally been the most rational approach to healing ulcers successfully. However, ulcers initially healed using antisecretory therapy have a tendency to relapse after treatment is withdrawn. This tendency is altered definitively by eradication of Helicobacter pylori. Antimicrobial therapy should be given to all patients with documented duodenal and gastric ulcer associated with H. pylori infection. The optimal therapeutic regimen to eradicate H. pylori is still not completely clear. The requirement for treatment to be effective in more than 90% of patients makes monotherapy and dual therapy inappropriate. Bismuth-based triple therapy (bismuth, tetracycline and metronidazole) is highly efficacious if the H. pylori strain is sensitive to metronidazole and the patient is compliant, but adverse effects often occur. Triple therapy consisting of omeprazole and 2 antimicrobials (clarithromycin and/or amoxicillin and/or metronidazole) and quadruple therapy (bismuth-based triple therapy plus omeprazole) are both very effective and patient compliance may be better because of the shortened (1 week) course. Preliminary data indicate that the efficacy of the regimen is not influenced by imidazole resistance. Eradication of H. pylori prevents complications and relapse of peptic ulcer disease and is a cost-effective option compared with maintenance acid-suppressive therapy.

Ray K. et al. *Trend of antimicrobial resistance in Neisseria gonorrhoeae at New Delhi, India.* Int J STD AIDS. 2000; 11(2) : 115-8.p Abstract: We aim to monitor the trends of antimicrobial resistance in Neisseria gonorrhoeae and to compare the results of antimicrobial sensitivity by disc diffusion and minimum inhibitory concentration (MIC). Two hundred and eleven confirmed strains of N. gonorrhoeae were subjected to antimicrobial sensitivity testing by disc diffusion using penicillin, tetracycline, ciprofloxacin and ceftriaxone from 1995 to June 1999. Penicillinase-producing Neisseria gonorrhoeae (PPNG) were detected by Iodometric method. Minimum inhibitory concentration was determined by E test. A low level of penicillin resistance and PPNG detected in 1996 was maintained over the years. Significant increasing trend of tetracycline and ciprofloxacin resistance with high MIC i.e. 2-96 microg/ml and 1-32 microg/ml respectively were found. Ceftriaxone was found to be the drug of choice, being 100% sensitive. Comparison of resistance pattern by the 2 tests showed satisfactory agreement. Emergence of penicillin, quinolone and tetracyline resistance in N. gonorrhoeae isolates from a major STD centre at New Delhi indicates the need for increased awareness, prudent use of antimicrobials, and evaluation of new antimicrobials for the treatment of gonorrhoea.

Raymond J. et al. *Nosocomial infections in pediatric patients: a European, multicenter prospective study. European Study Group.* Infect Control Hosp Epidemiol. 2000; 21(4) : 260-3.p Abstract: OBJECTIVES: To determine the site and bacterial epidemiology of nosocomial infections (NIs) in children. DESIGN: 6-month prospective study with periodic chart review during hospitalization using a uniform prospective questionnaire in each unit, analyzed at a coordinating center. SETTING: 20 units in eight European countries: 5 pediatric intensive care units (PICUs), 7 neonatal units, 2 hematology-oncology units, 8 general pediatric units. PARTICIPANTS: All children hospitalized during the study period with an NI according to Centers for Disease Control and Prevention criteria. RESULTS: The overall incidence of NI was 2.5%, ranging from 1% in general pediatric units to 23.6% in PICUs. Bacteria were responsible for 68% (gram-negative bacilli, 37%; gram-positive cocci, 31%), Candida for 9%, and viruses for 22% of cases. The proportion of lower respiratory tract infections was 13% in general pediatric units and 53% in

PICUs. Bloodstream infections were most frequent in neonatal units (71% of NIs) and were associated with a central venous catheter in 66% of cases. Coagulase-negative Staphylococcus (CNS) was the main pathogen. Eleven percent of NI were urinary tract infections. Gastrointestinal infections were most commonly viral and accounted for 76% of NIs in general pediatric units. The prevalence of antimicrobial resistance depended on the type of unit. The highest rates were observed in PICUs: 26.3% of Staphylococcus aureus and 89% of CNS were methicillin-resistant, and 37.5% of Klebsiella pneumoniae had an extended-spectrum beta-lactamase. Mortality due to NI was 10% in PICUs and 17% in neonatal units. CONCLUSIONS: We found large differences in NI frequency and microbial epidemiology in this European study. Viruses were the main pathogens in general pediatrics units. Catheter-related sepsis and CNS were frequent in newborns. A high frequency of multiresistant bacteria was observed in some units. Clinical monitoring of NIs and bacterial resistance profiles are required in all pediatric units.

Raz R. et al. *Chronic indwelling catheter replacement before antimicrobial therapy for symptomatic urinary tract infection.* J Urol. 2000; 164(4) : 1254-8.p Abstract: PURPOSE: We determined whether routine replacement of a chronic indwelling catheter before instituting antimicrobial therapy leads to an improved bacteriological or clinical outcome when treating symptomatic urinary tract infection in elderly nursing home residents. MATERIALS AND METHODS: We performed a prospective randomized open clinical trial at 2 long-term care facilities. Patients were randomized to indwelling catheter replacement before initiating antimicrobial therapy or no replacement. Urine and blood cultures were done before antimicrobial therapy began. Clinical and microbiological outcomes were assessed after 3 days of therapy, and 7 and 28 days after therapy was complete. RESULTS: Enrolled in our study were 21 male and 33 female nursing home residents with a mean age of 72.6 years, a chronic indwelling catheter and a clinical diagnosis of urinary tract infection. A total of 27 cases were randomized to either catheter replacement and no replacement before antimicrobial therapy. Polymicrobial bacteriuria significantly decreased 3 days after therapy was initiated, and 7 and 28 days after it was discontinued in 24 versus 8 ($p = 0.002$), 18 versus 9 ($p = 0.01$) and 13 versus 5 ($p = 0.02$) patients with and without catheter replacement, respectively. Catheter replacement was also associated with a shorter time to afebrile status, improved clinical status 72 hours after the initiation of therapy in 25 versus 11 patients ($p < 0.001$) and a lower rate of symptomatic clinical relapse 28 days after therapy in 3 versus 11 ($p = 0.015$). CONCLUSIONS: Clinical and bacteriological outcomes are improved when long-term indwelling catheters are replaced before initiating antimicrobial therapy for symptomatic urinary tract infection.

Read R.C. *Evidence-based medicine: empiric antibiotic therapy in community-acquired pneumonia.* J Infect. 1999; 39(3) : 171-8.p Abstract: A number of national society guidelines exist for empiric management of community-acquired pneumonia but these are, to a large extent, not evidence-based, but based on clinical experience, in vitro data, pragmatism and common sense. Many randomized controlled trials of antibiotic therapy in community-acquired pneumonia have been conducted, but most of these have been powered to demonstrate equivalent efficacy of new treatments in comparison with conventional antimicrobial therapy. Development of new antibiotics has been driven by the emergence of penicillin-resistant Streptococcus pneumoniae, but so far there is no hard evidence that beta-lactam therapy fails in community-acquired pneumonia, at least with the higher doses of penicillins that are commonly used in hospital practice. Nonetheless, newer antibiotics have been deployed including macrolides and quinolones, and have demonstrated equivalent (and in some cases, marginally improved) efficacy to older antibiotic treatments in randomized control trials. A number of studies have shown that it is possible to stratify patients according to severity of illness, to in-patient or out-patient management protocols. These have been validated and refined.

Rebuck J.A. et al. *Infection related to intracranial pressure monitors in adults: analysis of risk factors and antibiotic prophylaxis.* J Neurol Neurosurg Psychiatry. 2000; 69(3) : 381-4.p Abstract: OBJECTIVE: Infection is a complication related to intracranial pressure monitoring devices. The timing, duration, and role of prophylactic antimicrobial agents against intracranial pressure monitor (ICPM) related infection have not previously been well defined. Risk factors and selection, duration, and timing of antibiotic prophylaxis in patients with ICPMs were evaluated. METHODS: Records of all consecutive patients who underwent ICPM insertion between 1993 and 1996 were reviewed. Patients included were older than 12 years with an ICPM placed for at least 24 hours. Exclusion criteria consisted of ICPM placed before admission or documented CSF infection before or at the time of insertion. Standard criteria were applied to all patients for diagnosis of CSF infection. RESULTS: A total of 215 patients were included, 16 (7.4%) of whom developed CSF infection. Antibiotic prophylaxis for ICPM placement was administered to 63% of infected and 59% of non-infected patients. Vancomycin (60%) and cefazolin (34%) were used most often. Sixty per cent (6/16) of patients who developed infection and 45% (53/199) of those without CSF infection received their first antibiotic dose within the 2 hours before ICPM insertion. Risk factors for CSF infection included duration of monitoring greater than 5 days (RR 4.0 (1.3-11.9)); presence of ventriculostomy (RR 3.4 (1.0-10.7)); CSF leak (RR 6.3 (1.5-27.4)); concurrent systemic infection (RR 3.4 (1.2-9.5)); or serial ICPM (RR 4.9 (1. 7-13.8)). CONCLUSIONS: Administration of antibiotics to patients before or at the time of ICPM placement did not decrease the incidence of CSF infection. Patients found to be at greater risk for infection at our institution included duration of ICPM greater than 5 days, use of ventricular catheter, CSF leak, concurrent systemic infection, or serial ICPM.

Reddy S.C. et al. *Orbital abscess due to acute ethmoiditis in a neonate.* Int J Pediatr Otorhinolaryngol. 1999; 49(1) : 81-6.p Abstract: Orbital complications due to ethmoiditis are not uncommon in children. However, they are very rare in infants. A case of orbital abscess due to acute ethmoiditis in a 10 days old boy is reported. Causative microorganisms isolated from the operated specimen were Staphylococcus aureus and aspergillosis. Successful outcome was achieved following antimicrobial therapy, external ethmoidectomy, and surgical drainage of the abscess. The aetiopathogenesis and management of this clinical entity is discussed, with a brief review of the literature.

Reddy V.M. *Mechanism of Mycobacterium avium complex pathogenesis.* Front Biosci. 1998; 3 : d525-31.p Abstract: Mycobacterium avium complex (MAC) group of microorganisms are the most common opportunistic bacterial pathogens causing disseminated disease in HIV infected patients. These microorganisms are ubiquitous in nature, and are acquired by respiratory and oral routes. Pathogenesis of MAC depends on the ability of the organisms to colonize intestinal/respiratory mucosa, penetrate the protective barriers and resist intracellular killing by macrophages. Transient and reversible variation of colony morphology is one the characteristic feature of MAC that plays a significant role in the virulence and pathogenesis of these microorganisms. Isogenic colony variants of MAC differ in their virulence, susceptibility to antibiotics, stimulation of oxygen radicals and cytokines. The virulent smooth transparent colony variants are more frequently isolated from AIDS patients, more efficient in mucosal colonization, and adhere more efficiently to epithelial cells as compared to the less virulent smooth opaque variants. However, both the isogenic variants bind to the mucosal epithelial cells through the same multiple receptors. In addition, both the isogenic variants of MAC also bind to intestinal mucus through a single receptor. Study of the interaction of MAC with the host cells and characterization of MAC adhesins and host cell receptors facilitates the elucidation of the mechanisms involved in MAC pathogenesis.

Reece S.M. *The emerging threat of antimicrobial resistance: strategies for change.* Nurse Pract. 1999; 24(11) : 70, 73, 77-80 passim.p Abstract: An urgent warning has been issued by public health authorities worldwide about the threat of antimicrobial resistance by common community-acquired microorganisms such as Streptococcus pneumoniae. Many provider practices have been implicated in this emerging health threat by engaging in inappropriate prescriptive behaviors: imprecise infection diagnoses, "giving in" to patient requests, limiting time spent with patients, fearing liability, and inadequately controlling infections. Patient-related factors implicated in the health threat include a lack of knowledge about bacterial versus viral illness, insistence on receiving antibiotics, nonadherence to drug regimens, and exposure to resistant organisms. Antimicrobials in the environment and the adaptability of microorganisms are also factors. This article evaluates the factors promoting resistance and provides strategies for reversing the trend.

Regan F.A. et al. *Prospective investigation of transfusion transmitted infection in recipients of over 20 000 units of blood. TTI Study Group.* BMJ. 2000; 320(7232) : 403-6.p Abstract: OBJECTIVES: To follow up recipients of 20 000 units of blood to identify any transmissions of infections through blood transfusion. DESIGN: Follow up study of recipients of transfusion. SETTING: 22 hospitals in north London. PARTICIPANT: Adult patients who had recently been transfused. MAIN OUTCOME MEASURES: Patients had further blood samples taken at 9 months that were tested for markers of hepatitis B and C and HIV and human T cell leukaemia/lymphoma virus type I or II (HTLV) infections. Recent infections were distinguished from pre-existing infections by comparison with blood samples taken before transfusion. RESULTS: 9220 patients were recruited, and 5579 recipients of 21 923 units of blood were followed up. No transfusion transmitted infections were identified. The incidence of transfusion transmitted infections was 0 in 21 043 units (95% confidence interval for risk 0 to 1 in 5706 recipients) for hepatitis B; 0 in 21 800 units (0 to 1 in 5911 recipients) for hepatitis C; 0 in 21 923 units (0 to 1 in 5944 recipients) for HIV; and 0 in 21 902 units (0 to 1 in 5939 recipients) for human T cell leukaemia/lymphoma virus. Three patients acquired hepatitis B during or after hospital admission but not through transfusion; 176 (3%) had pre-existing hepatitis B infection. Sixteen (0.29%) patients had hepatitis C, and five (0.09%) had human T cell leukaemia/lymphoma virus. CONCLUSIONS: The current risk of transfusion transmitted infections in the United Kingdom is very small, though hospital acquired infections may arise from sources other than transfusion. A considerable proportion of patients have pre-existing infections.

Rehse K. et al. *Antimicrobial effects of oligoamines.* Arch Pharm (Weinheim). 1996; 329(3) : 155-60.p Abstract: Twenty-four oligoamines belonging to six (1-6) structurally different types were tested in vitro for their antibacterial activity against 14 different bacterial species comprising a total of 187 strains. Ten compounds were able to inhibit growth of at least one strain at concentrations < or = 10 mumol/L. For three compounds, minimum inhibitory concentrations for some strains were even below 1 mumol/L. Clear structure-activity relationships showed that the inhibitory effect depended on the bridge connecting the nitrogen atoms, the substitution of the nitrogens, and the number of nitrogen atoms present in one molecule. Substitutions like N-4-phenylbutyl, N-octyl, and N-nonyl were most active, while short (butyl) and long (dodecyl) substituents diminished or abolished the activity. The antimicrobial spectrum of the oligoamines tested here covered gram-positive (e.g. Staphylococcus aureus, Listeria monocytogenes, Bacillus subtilis) and gram-negative (e.g. Escherichia coli, Citrobacter spp., Acinetobacter spp.) microorganisms. The type of action was classified as bactericidal. As the inhibition of growth is complete immediately after the addition of the oligoamines, an interaction with the bacterial cell-membrane is probable.

Reiche T. et al. *A prospective, controlled, randomized study of the effect of a slow-release silver device on the frequency of urinary tract infection in newly catheterized patients.* BJU Int. 2000; 85(1) : 54-9.p Abstract: OBJECTIVE: To test the effect on urinary tract infections (UTIs) in patients needing continuous indwelling catheterization, of a newly designed urine-collecting system containing an antibacterial device which slowly releases silver ions onto the inner surface of the system. PATIENTS AND METHODS: The study comprised a prospective controlled randomized trial; 213 patients fulfilled the inclusion criteria. They were randomized to a urine drainage system (comprising a Unometer 400 metering system or PP 2000N closed urine-bag system, both from Maersk Medical, Denmark) either with or without the antibacterial device. The efficacy was assessed as the number of UTIs and the time to infection in the 170 patients eligible for analysis. RESULTS: There were fewer UTIs in those using the system containing the antibacterial device (19% vs 24%), but the difference was not statistically significant ($P < 0.05$). CONCLUSION: The potential importance of different infection routes were highlighted, suggesting that modifications to Foley catheters and urine-collecting systems attempting to prevent UTIs should focus not only on the intraluminal pathway, but on the internal and external pathways of infection.

Reichler M.R. et al. *Spread of multidrug-resistant Streptococcus pneumoniae among hospitalized children in Slovakia.* J Infect Dis. 1996; 173(2) : 374-9.p Abstract: A multidrug-resistant serotype 14 strain of Streptococcus pneumoniae was isolated from sterile-site specimens and nasopharyngeal secretions from > 200 children in Slovakia between 1985 and 1990. Nasopharyngeal culture surveys were done to determine the extent of spread and means of transmission of this strain. The resistant strain was isolated from cultures of 8 (33.0%) of 24 children at hospital A and from 1 (0.8%) of 130 children attending outpatient clinics or day care centers ($P < .001$). One-quarter of the initially uncolonized children at hospital A acquired the resistant strain during hospitalization. Among hospitalized children, frequent antimicrobial drug use ($P < .01$), prior hospitalization ($P < .005$), and length of hospital stay ($P < .001$) were associated with infection with the resistant strain. These findings support limiting broad-spectrum antimicrobial drug use and nonessential hospitalizations in settings were drug-resistant pneumococci are prevalent. Development of a pneumococcal vaccine that is immunogenic in young children is urgently needed.

Reichler M.R. et al. *Multiple antimicrobial resistance of pneumococci in children with otitis media, bacteremia, and meningitis in Slovakia.* J Infect Dis. 1995; 171(6) : 1491-6.p Abstract: Penicillin-resistant pneumococci have been isolated from middle ear fluid, blood, cerebrospinal fluid, and nasopharyngeal secretions of several hundred children in Slovakia since 1985; 116 of these isolates were serotyped and tested for susceptibility to antimicrobial drugs at the Centers for Disease Control and Prevention. To define the prevalence of drug-resistant pneumococci and identify risk factors for infection, laboratory and medical records were reviewed. Nearly all (96%) of the resistant strains tested were serotype 14. Of these, all were resistant to penicillin (MIC, 4-16 micrograms/mL); most were resistant to cefaclor, erythromycin, tetracycline, and chloramphenicol; and many had decreased susceptibility to trimethoprim-sulfamethoxazole and ceftriaxone. Frequent antibiotic use, prior hospitalization, and length of hospital stay ($P < .001$ for all 3) were associated with infection with resistant strains. These findings suggest the need for routine screening of pneumococcal isolates for penicillin resistance and highlight the importance of controlling globally the spread of resistant pneumococci.

Reid G. et al. *Effect on uropathogens of prophylaxis for urinary tract infection in spinal cord injured patients: preliminary study.* Spinal Cord. 1997; 35(9) : 605-7.p Abstract: Spinal cord injured patients are highly prone to urinary tract infections. The high frequency of recurrences, the problems with drug resistance and the difficulties associated with diagno-

sis complicate the management. In a preliminary retrospective study of 30 patient files, we discovered that prophylactic antimicrobial therapy with trimethoprim-sulfamethoxazole, significantly reduced the incidence of symptomatic urinary tract infections. The prevention of infection resulted in cheaper healthcare expenses than treatment. ONe problematic outcome was that antibiotic therapy resulted in a dramatic change in the population of uropathogens infecting the host, from a predominantly Gram negative type to one dominated by Enterococcus faecalis.

Reid G. et al. *Asymptomatic bacteriuria in spinal cord patients and the elderly.* Urol Clin North Am. 1999; 26(4) : 789-95.p Abstract: The prevalence and incidence of symptomatic and asymptomatic bacteriuria will remain high for many years to come. Antimicrobial agents are necessary to treat symptomatic UTI because no natural methods have been shown to be effective. Treatment of ABU is not appropriate. There is growing resistance to antibiotics, biocides, and antiseptics and, simultaneously, a decreasing rate of introduction of new antibacterial agents; thus the problem of resistance is magnified and potentially complicates the management of patients with SCI and elderly persons. New options of managing health and of preventing ABU and UTI and the complications arising from these diseases must be investigated vigorously and urgently. In particular, further study of the role of bacterial biofilms, the normal microflora, the influence of diet and hygiene, and the importance of the host immune response in the process of urinary tract colonization and infection is relevant and necessary.

Reimer K. et al. *[Molecular effects of a microbicidal substance on relevant microorganisms: electron microscopic and biochemical studies on povidone-iodine].* Zentralbl Hyg Umweltmed. 1998; 200(5-6) : 423-34.p Abstract: The microbicidal activity of the broad spectrum antimicrobial agent povidone-iodine is due to the strong oxidizing effects of free iodine on functional groups of amino acids, nucleotides and double bonds of unsaturated fatty acids. While the chemical mechanism of action of PVP-iodine is well understood, the actual sequence of events on the cellular and molecular level that causes rapid cell death has not been fully understood. The aim of this study was to elucidate effects of povidone-iodine on cell ultrastructure by electron microscopy and to monitor changes in enzyme activity and nucleotide efflux. Staphylococcus aureus, E. coli and C. albicans, medically relevant gram-positive, gram-negative and yeast microorganisms, served as models. In the presence of povidone-iodine, rapid partitioning of the cytoplasm and pronounced coagulation of nuclear material was noted. Especially C. albicans exhibited a rapid, dose-dependent "loosening" of the cell wall; cells remained intact without lysis, rupture or wall breakage. Changes in beta-galactosidase and nucleotide concentrations were measured in E. coli. A rapid and dose-dependent loss of cellular beta-galactosidase activity was found, with no increase in the supernatant; loss of cellular nucleotides corresponded with an increase in the supernatant. Electron microscopy and biochemical observations support the conclusion that povidone-iodine interacts with cell walls of microorganisms causing pore formation or generating solid-liquid interfaces at the lipid membrane level which lead to loss of cytosol material, in addition to enzyme denaturation. The chemical mechanism of action explains the fact that povidone-iodine does never generate resistance in micro-organisms.

Reinert R.R. et al. *Antimicrobial resistance and type distribution of Streptococcus pneumoniae isolates causing systemic infections in Germany, 1992-1994.* Clin Infect Dis. 1995; 21(6) : 1398-401.p Abstract: A prospective study of pneumococcal infections was performed in cooperation with 40 clinical microbiology laboratories in Germany. Minimal inhibitory concentration (MIC) values for 844 strains of Streptococcus pneumoniae, isolated from patients with systemic infections, were determined in tests with penicillin, tetracycline, erythromycin, chloramphenicol, cefotaxime, and clindamycin by a standard broth microdilution method; 1.8% of pneumococcal isolates exhibited reduced susceptibility to penicillin (MIC, > or = 0.1 micrograms/mL). The Etest, which was used to confirm the level of resistance to penicillin, proved to be a reliable and easily performed method for determination of MICs. The rates of resistance to clindamycin, erythromycin, tetracycline, and chloramphenicol were 1.4%, 3.2%, 11.0%, and 1.9%, respectively. Resistance to cefotaxime was not observed. Typing of a randomly selected subgroup of all strains (n = 115) showed types 1 (9.6%), 14 (8.7%), 3 (7.8%), and 23F (7.8%) to be the most prevalent types in Germany. At least 86.1% of these pneumococcal strains belonged to capsular types included in the 23-valent vaccine.

Reinert R.R. et al. *Moxifloxacin: a comparison with other antimicrobial agents of in-vitro activity against Streptococcus pneumoniae.* J Antimicrob Chemother. 1998; 42(6) : 803-6.p Abstract: Two hundred representative isolates, including 26 strains of Streptococcus pneumoniae with intermediate resistance to penicillin, were selected from a collection obtained from blood cultures of patients with bacteraemic pneumococcal pneumonia. The MICs of moxifloxacin (BAY 12-8039), grepafloxacin, sparfloxacin, levofloxacin, ofloxacin, ciprofloxacin, erythromycin, tetracycline and penicillin G were determined by a standard agar dilution technique. Moxifloxacin had the highest in-vitro activity against S. pneumoniae (MIC90 = 0.25 mg/L; MIC range 0.06-0.25 mg/L). The MIC90 values were one dilution lower than those obtained with sparfloxacin and grepafloxacin, three dilutions lower than those obtained with levofloxacin, and four dilutions lower than those of ofloxacin and ciprofloxacin.

Reis A.G. et al. *[Staphylococcus aureus septicemia in children: bacterial tolerance to vancomycin and serum bactericidal activity].* Rev Assoc Med Bras. 1995; 41(1) : 47-52.p Abstract: PURPOSE—To evaluate the susceptibility and of strains of Staphylococcus aureus isolated from children with septicemia, and to evaluate the importance of the serum bactericidal test. METHODS—Seventeen children with Staphylococcus aureus septicemia admitted to the Semi Intensive Care Unit of the Instituto da Crianca do Hospital das Clinicas da Faculdade de Medicina da Universidade de Sao Paulo were studied. Twenty nine tests in the pico and 23 in the nadir of the antibiotics were made. RESULTS—Strains of Staphylococcus aureus from hospital origin were resistant to all the antibiotics but vancomycin and pefloxacin. The phenomenon of tolerance was seen in 5 (50%) of the strains that were tested for vancomycin, and 4 of the children had a bad evolution. The serum bactericidal tests showed titles in the pico > or = 1/8 in 55.5% of the observations; in this group the evolution was better. CONCLUSION—Strain of Staphylococcus aureus from hospital origin are multiresistant. The phenomenon of antimicrobial tolerance, as well as the serum bactericidal test may be related to a bad therapeutic evolution. The increasing value of the serum bactericidal test as a way to evaluate the therapeutic evolution in severe infections, and the role of the tolerance of the Staphylococcus aureus to vancomycin more studies.

Reis A.G.A.C. et al. *Septicemia por Staphylococcus aureus em crianças: tolerância bacteriana…vancomicina e poder bactericida do soro.* Rev. Assoc. Med. Bras. (1992). 1995; 41(1) : 47-52.p Abstract: OBJETIVO. Analisar a sensibilidade e tolerância das cepas de Staphylococcus aureus isoladas de crianças com septicemia e avaliar o poder bactericida sérico na monitorização terapêutica desses casos. MÉTODOS. Foram estudados 17 casos de crianças com septicemia por Staphylococcus aureus internadas na Enfermaria de cuidados semi-Intensivos do Instituto da Criança do Hospital das Clínicas da Faculdade de Medicina da Universidade de São Paulo. Foram realizados testes de sensibilidade antimicrobiana pelo método de difusão em disco e diluição em tubo. Foram realizados 29 testes no pico e 23 no vale dos antibióticos utilizados, determinando o poder bactericida do soro. RESULTADOS. As cepas de Staphylococcus aureus de origem hospitalar mostraram resistência a quase todos os antibióticos, exceto vancomicina e pefloxacina. Observou-se fenô-

meno de tolerância em cinco (50 por cento) das cepas testadas para vancomicina, sendo que quatro apresentaram má evolução clínica. Os testes para determinação do poder bactericida sérico revelaram títulos no pico ò 1/8 em 55,5 por cento das observações; neste grupo a evolução clínica foi melhor. CONCLUSÃO. As cepas de Staphylococcus aureus de origem hospitalar estudadas são multirresistentes. O fenômeno de tolerância antimicrobiana, assim como o poder bactericida do soro em níveis baixos, pode estar associado a má resposta terapêutica. A valorização do PBS como critério de avaliação terapêutica em infecçöes graves e o papel da tolerância do Staphylococcus aureus … vancomicina merecem maiores estudos (AU).

Rello J. et al. *Evaluation of outcome of intravenous catheter-related infections in critically ill patients.* Am J Respir Crit Care Med. 2000; 162(3 Pt 1) : 1027-30.p Abstract: Fifty-seven patients developed an episode of catheter-related infection (CRI) in the bloodstream during their stay in the intensive care unit (cases) and were prospectively observed to establish the attributable mortality, increase in length of stay, and excess costs. Costs were estimated by multiplying the number of excess days of stay by the reimbursement provided. The outcomes for these cases were compared with those for matched control subjects without CRI. Eight cases were excluded as no control was found. Of the 49 cases, 31 were coagulase-negative staphylococci (CNS). The level of severity was similar for both groups (APACHE II 15.5 +/- 7. 2 versus 15.2 +/- 7.3). There were no significant differences ($p > 0.20$) in the mortality observed in the hospital for the cases (22.4%, 95% confidence interval [CI] 0.3% to 34.9%) and the control subjects (34.7%, 95% CI 21.2% to 40.1%). Among the survivors, the hospital stay was increased by 19.6 d (95% CI -1.1; 40.4). This represents an added cost of 3,124 Euros per episode of CRI among the survivors. In conclusion, our cohort study failed to show a difference in attributable mortality due to CRI in intensive care unit patients. Nevertheless, these infections lead to an increase in hospital stay of approximately 20 d. Each episode of CRI represents an additional cost of more than 3,000 Euros.

Rello J. et al. *Variations in etiology of ventilator-associated pneumonia across four treatment sites: implications for antimicrobial prescribing practices.* Am J Respir Crit Care Med. 1999; 160(2) : 608-13.p Abstract: This retrospective multicenter study compared microorganisms documented by quantitative cultures from bronchoscopic samples in episodes of ventilator-associated pneumonia (VAP) from three different institutions in Barcelona (B), Montevideo (M), and Seville (S). The observations were compared with the findings reported by Trouillet and coworkers (AJRCCM 1998;157:531-539) in Paris (P). The objective was to evaluate whether a classification of etiologies of VAP in four groups, based on the number of ventilation days and previous antimicrobial use, might contribute to establishing generalized guidelines for empirical therapy. Significant variations in etiologies ($p < 0.05$) were found in all of the microorganisms isolated from VAP episodes across three treatment sites when compared with the reference site (P). In Group 1 (< 7 d and absence of antibiotics), Pseudomonas aeruginosa remained extremely infrequent (3 of 89, 3.3%) in the joint category, whereas the incidence of Acinetobacter baumannii was significantly higher, owing to M findings. On the other hand, one site (B) had a significantly lower incidence of multiresistant pathogens (Methicillin-resistant Staphylococcus aureus [MRSA] and nonfermenters other than P. aeruginosa), even in Group 2 (< 7 d and antibiotics), Group 3 (>/= 7 d and absence of antibiotics), and Group 4 (antibiotics and >/= 7 days). Similar findings were documented when episodes were grouped according to Groups 1 and 3 of the ATS guidelines. We conclude that causes of VAP varied markedly across four treatment sites, resulting in the need for large-scale variations in antimicrobial prescribing practices. Instead of following general recommendations, antimicrobial prescribing practices for VAP should be based on up-to-date information of the pattern of multiresistant isolates from each institution.

Rello J. et al. *Microbial causes of ventilator-associated pneumonia.* Semin Respir Infect. 1996; 11(1) : 24-31.p Abstract: Aspiration of microorganisms colonizing the oropharynx is the main route of bacterial entry to lower airways in mechanically ventilated patients. Examination of the microbial flora involved in ventilator-associated pneumonia shows that only few species, among the many oropharynx microorganisms, are responsible for the majority of lower respiratory tract colonizations and infections in intubated patients. Underlying disease, length of intubation, and type and duration of prior antibiotic therapy are the most important factors related with the causative flora of respiratory infections in these patients. Except in certain populations (eg, chronic obstructive pulmonary disease [COPD] patients who may be colonized by Pseudomonas aeruginosa), methicillin-sensitive Staphylococcus aureus, Streptococcus pneumoniae, and unencapsulated Hemophilus influenzae are the predominant respiratory pathogens within the first week of intubation in critically ill patients. These microorganisms are subsequently replaced by multiresistant flora, such as Pseudomonas aeruginosa, methicillin-resistant staphylococci or Acinetobacter baumanii. This change of flora takes place as a consequence of prior antibiotic therapy among other factors. Fungi have to be taken in account particularly in the presence of severe immunodepression. All of these multiresistant pathogens (particularly P aeruginosa) are responsible for most of the deaths directly related to pneumonia; therefore, the early recognition of causative agents and appropriate antibiotic therapy are of great importance determining outcome. This strategy represents the most efficient approach to managing patients with ventilator-associated pneumonia.

Rello J. et al. *Mortality as an outcome in hospital-acquired pneumonia.* Infect Control Hosp Epidemiol. 1998; 19(10) : 795-7.p Abstract: The most common route of entry of pathogens into the lung in patients managed in the intensive-care unit is aspiration of contaminated oropharyngeal secretions or gastric contents. In intubated patients, the risk of this type of infection is particularly high. Knowledge of specific risk factors for specific microorganisms, along with the origin of acquisition (primary endogenous, secondary endogenous, or exogenous), will permit a more rational and effective method of prevention. Attributable mortality is highly dependent on the institution of a correct initial antibiotic choice, as well as the interaction between the virulence of the pathogen responsible and host defenses. However, survival in these patients is determined primarily by the degree of severity at the time of pneumonia diagnosis and the response to initial therapy. As a consequence, the number of preventable deaths is likely to be much smaller than the total. Therapy requires both supportive and specific measures. When diagnostic information becomes available, it permits the rescue of some patients with inadequate therapy or simplifies the spectrum of the empirical therapy. Initial antibiotic choice should be based on expected etiologic pathogens, while knowledge of local microbial epidemiology and susceptibility patterns is crucial.

Renneberg J. et al. *Antimicrobial susceptibility of 278 streptococcal blood isolates to seven antimicrobial agents.* J Antimicrob Chemother. 1997; 39(2) : 135-40.p Abstract: A total of 278 streptococci isolated from blood (including 66 strains of Streptococcus pneumoniae) were tested for their MIC to penicillin G, gentamicin, rifampicin, clindamycin, erythromycin, vancomycin and teicoplanin to determine the current state of resistance among streptococci isolated from blood at a University Hospital in Copenhagen, Denmark, and thereby to assess alternative treatment for patients who are infected with a penicillin-resistant streptococcal strain or allergic to penicillin. Danish Blood Sensitivity Agar and the Etest were used. Overall, resistance to penicillin among Streptococcus mitis strains was 44.4% (37% intermediately susceptible and 7.4% resistant). As penicillin resistance in S. mitis may be an early indication of emerging penicillin resistance among other streptococcal species, this finding is a matter of concern. Except for this observation, penicillin remains the best and a safe choice for treatment of streptococcal infection. For

alternative treatment when the patient is allergic to penicillin and for prophylaxis, the usual recommendation is macrolide antibiotics or clindamycin. The majority of non-enterococcal groups of streptococci remain sensitive to erthromycin and clindamycin, but the antibiotic susceptibility pattern is unpredictable without testing the isolates, so empirical therapy or prophylaxis may fail.

Renneberg J. et al. *Evaluation of Staph ID 32 system and Staph-Zym system for identification of coagulase-negative staphylococci*. J Clin Microbiol. 1995; 33(5) : 1150-3.p Abstract: The purpose of the investigation was to evaluate two commercially available identification systems: a new modification of the Staph-Zym system (Rosco, Tastrup, Denmark) and the Staph ID 32 API system (API System, BioMerieux, Paris, France). A local standard method to be used in routine laboratories was also evaluated. A total of 200 staphylococcal isolates, including strains from both the American Type Culture Collection and the Czechoslovak Collection of Microorganisms as well as 89 clinical isolates, were used in tests of all three identification systems. The Staph ID 32 API system identified from 50 to 100% of the reference strains and 82.1% of the clinical isolates correctly. The Staph-Zym system identified from 90 to 100% of the reference strains and 82.1% of the clinical isolates correctly. Most misidentifications were of minor importance, but in both systems major failures appeared (Staphylococcus aureus was identified as a coagulase-negative staphylococcus). Both systems needed backup from a reference laboratory to determine if two isolates were of the same strain.

Replogle M.L. et al. *Emergence of antimicrobial-resistant shigellosis in Oregon*. Clin Infect Dis. 2000; 30(3) : 515-9.p Abstract: Ampicillin and trimethoprim-sulfamethoxazole (TMP-SMZ) are currently considered acceptable empirical therapy for shigellosis in developed countries. However, there are few recently reported studies on antimicrobial resistance among shigellae isolated in the United States. We examined the epidemiology of shigellosis and the antimicrobial susceptibility of Shigella species isolated in Oregon from July 1995 through June 1998. Of 430 isolates, 410 were identified to the species level: Shigella sonnei accounted for 55% of isolates, and Shigella flexneri, for 40%. The overall annual incidence of shigellosis was 4.4 cases per 100,000 population. Children aged <5 years (annual incidence, 19.6 cases per 100,000 population) and Hispanics (annual incidence, 28.4 cases per 100,000 population) were at highest risk. Of 369 isolates tested, 59% were resistant to TMP-SMZ, 63% were resistant to ampicillin, 1% were resistant to cefixime, and 0.3% were resistant to nalidixic acid; none of the isolates were resistant to ciprofloxacin. Thirteen percent of the isolates had multidrug resistance to ampicillin, chloramphenicol, streptomycin, sulfisoxazole, and tetracycline. Infections due to multidrug-resistant shigellae are endemic in Oregon. Neither ampicillin nor TMP-SMZ should be considered appropriate empirical therapy for shigellosis any longer; when antibiotics are indicated, a quinolone or cefixime should be used.

Restaino L. et al. *Efficacy of ozonated water against various food-related microorganisms.* Appl Environ Microbiol. 1995; 61(9) : 3471-5.p Abstract: The antimicrobial effects of ozonated water in a recirculating concurrent reactor were evaluated against four gram-positive and four gram-negative bacteria, two yeasts, and spores of Aspergillus niger. More than 5 log units each of Salmonella typhimurium and Escherichia coli cells were killed instantaneously in ozonated water with or without addition of 20 ppm of soluble starch (SS). In ozonated water, death rates among the gram-negative bacteria—S. typhimurium, E. coli, Pseudomonas aeruginosa, and Yersinia enterocolitica—were not significantly different ($P > 0.05$). Among gram-positive bacteria, Listeria monocytogenes was significantly $P < 0.05$) more sensitive than either Staphylococcus aureus or Enterococcus faecalis. In the presence of organic material, death rates of S. aureus compared with L. monocytogenes and E. coli compared with S. typhimurium in ozonated water were not significantly ($P > 0.05$) affected by SS addition but were significantly reduced ($P < 0.05$) by addition of 20 ppm of bovine serum albumin (BSA). More than 4.5 log units each of Candida albicans and Zygosaccharomyces bailii cells were killed instantaneously in ozonated water, whereas less than 1 log unit of Aspergillus niger spores was killed after a 5-min exposure. The average ozone output levels in the deionized water (0.188 mg/ml) or water with SS (0.198 mg/ml) did not differ significantly ($P < 0.05$) but were significantly lower in water containing BSA (0.149 mg/ml).

Revathi G. et al. *Bacteriology of burns.* Burns. 1998; 24(4) : 347-9.p Abstract: A retrospective study was undertaken at University College of Medical Sciences and Guru Teg Bahadur Hospital, Delhi, to examine the bacterial isolates from the Burns unit and to determine the antibiograms of the isolates to commonly used antimicrobial agents. A total of 600 pus samples from as many patients received, over a period of 5 years (June 1993-June 1997) yielded 920) isolates. Pseudomonas spp. was the most common (36%) followed by Staphylococcus aureus (19%), Klebsiella spp. (15.54%), Proteus spp. (11.19%), Enterococcus faecalis (8.5%), Escherichia coli (5.10%), Acinetobacter spp. (1.1%), Salmonella senftenberg (0.8%) and other (3%). Pseudomonas spp. was the most susceptible to ceftazidime (83% susceptible) and cefoperazone (82% susceptible), whereas the drugs most effective in other Gram-negative organisms were amikacin, netilmicin and ciproflox. Vancomycin was effective in 100% of Gram-positive organisms. The infection of burn wounds with multiple organisms, with the superadded problem of drug resistance, necessitate the institution of a drug policy by the hospitals for burn patients.

Rey L.C. et al. *Prevalência de Haemophilus influenzae resistentes a ampicilina, cefaclor, cefotaxime, cloranfenicol e cotrimoxazol isolados de laboratórios na cidade de São Paulo / Prevalence of Haemophilus influenzae resistant to ampicillin, cefaclor, cefotaxime, chloramphenicol and cotrimoxazol isolated from laboratories in the city of São Paulo, Brazil*. J. pediatr. (Rio de J.). 1997; 73(1) : 26-31.p Abstract: Objetivo: Determinar a resistência … ampicilina e outros antimicrobianos de amostras de H. influenzae isoladas de diferentes materiais clínicos. Métodos; As amostras de H. influenzae foram identificadas por cultura com fatores V e X e prova do ácido amino-levulínico. A produção de á-lactamase (áLac) foi detectada pela nitrocefina. A sensibilidade aos antimicrobianos foi testada por difusão do disco e diluição em meio sólido. O sorotipo b foi testado por coaglutinação. Resultados: De 245 H. influenzae identificados, 155 foram testados para o sorotipo b e 28 por cento (43/155) mostraram-se positivos...(AU);.

Rezende E.M. et al. *Prevalence of nosocomial infections in general hospitals in Belo Horizonte.* Infect Control Hosp Epidemiol. 1998; 19(11) : 872-6.p Abstract: OBJECTIVE: To assess the magnitude of nosocomial infections (NI) in general hospitals of Belo Horizonte. DESIGN: Multicenter point-prevalence study of nosocomial infections. SETTING: All of the 11 general hospitals of Belo Horizonte that have more than 20 beds, from August 27 to October 5, 1992. RESULTS: Of the 2,339 patients surveyed, 267 patients had 328 nosocomial infections. The global prevalence rate of NI was 14.0%, ranging from 4.6% to 27.3% in the hospitals surveyed. The most prevalent infections were found to be pneumonia and surgical-wound infections, representing 19.5% and 19.2%, respectively, of the total infections. The highest prevalence rates of NI were observed in the cardiac surgery (31.9%), pediatric (27.2%), and orthopedic (20.7%) services. The most frequently isolated microorganisms were Staphylococcus aureus, Escherichia coli, Pseudomonas species, and Klebsiella species. CONCLUSION: The study allowed a thorough evaluation of the NI distribution profile in Belo Horizonte, Minas Gerais, Brazil, and showed it to be a serious public health problem that requires interinstitutional efforts so that effective action can be taken.

Ribarova N. et al. *[Intensive therapy units—the links in the risk for the development and spread of hospital infections].* Khirurgiia (Sofiia). 1998; 51(2) : 32-7.p Abstract: An epidemiological study on the wide spreading of nosocomial infections among patients admitted to intensive care units in Bulgaria is carried out, covering the period 1982 through 1996. The proportion of nosocomial infections registered in the aforementioned wards accounts for 4.66 +/- 0.33 per cent of the overall in patient infectious pathology. Eight per cent of the patients discharged from intensive care units develop infections originating in hospitals. The predominant nosological entities recorded include pulmonary infections, operative wound suppurations and urinary system infections. More than 15 microorganisms, causing agents of infectious processes, are isolated with E. coli ranking first, followed by Staphylococcus spp., Pseudomonas aeruginosa, etc. The partial registration of nosocomial infection cases in the various intensive care units interferes greatly with the practical implementation of updated and adequate measures for prophylaxis and struggle against the infections. Thus, conditions are created promoting prolongation and rising cost of the inpatient treatment, continuous disability, premature death and reduced efficiency of the medical cares delivered.

Riccardi F. et al. *Surveillance of infections in hospital: agents and antibiotic-resistance.* Eur J Epidemiol. 1997; 13(2) : 217-21.p Abstract: The surveillance system for Hospital Acquired Infections (HAI) implemented in the S. Eugenio hospital of Rome allows to monitor the distribution of the micro-organisms by service and their resistance to antibiotics. It is based upon the data collected by the Central Analysis Laboratory of the hospital. The data of four high-risk departments (Surgical service, Intensive Care Unit, Haematology, Burn Unit) are reported. In the period October 1992-September 1993, 3909 samples have been analyzed; 1603 (43.1%) were found positive to the microbiologic analysis. The results of the antibiotic resistance concerning four micro-organisms, agents of HAI are reported and discussed. Surveillance systems are necessary to limit the frequency of HAI.

Rice D.C. et al. *Intraoperative topical tetracycline sclerotherapy following mastectomy: a prospective, randomized trial.* J Surg Oncol. 2000; 73(4) : 224-7.p Abstract: BACKGROUND AND OBJECTIVES: Postoperative wound seromas are a frequent and troublesome occurrence after mastectomy. Recent reports have suggested the efficacy of topical sclerosants at reducing their formation. METHODS: A prospective, randomized, double-blinded trial was performed to examine the effect of intraoperatively administered topical tetracycline on the occurrence of postoperative mastectomy seromas. Thirty-two women were randomized to the control arm (normal saline) and 30 women to the tetracycline arm. In the treatment group, 100 ml (2 g) of tetracycline solution was administered topically to the chest wall and skin flaps prior to skin closure. The control group received an equal volume of normal saline. Patients were monitored for the development of postoperative wound seroma. RESULTS: There were no significant differences between groups regarding total volume of closed suction drainage, numbers of patients leaving hospital with drains in place, or duration of catheter drainage. Seroma formation 2 weeks postoperatively was greater in the tetracycline group than the control group (53% vs. 22%, P = 0.01). There were no differences between groups regarding the degree of postoperative pain, wound infection, or seroma formation 1 month postoperatively. CONCLUSIONS: Topical tetracycline is not effective at preventing post-mastectomy wound seromas.

Rice L.B. *Successful interventions for gram-negative resistance to extended-spectrum beta-lactam antiobiotics.* Pharmacotherapy. 1999; 19(8 Pt 2) : 120S-128S; discussion 133S-137S.p Abstract: Antibiotic resistance among nosocomial pathogens in this country's hospitals adds significantly to patient morbidity and mortality, and the cost of health care. Optimism for identifying antimicrobial agents that would "solve the problem" of resistance has been replaced by a much more guarded and realistic view of the battle between humans and pathogenic microorganisms. Efforts now are more appropriately directed toward limiting, rather than completely eliminating, resistance, generally by either infection control or antibiotic control measures, and sometime combinations of the two. Methicillin-oxacillin resistance in Staphylococcus aureus (MRSA) results from the expression of an acquired penicillin-binding protein (PBP 2a) that is not transferable in vitro. In most hospitals, even those with high percentages of MRSA, relatively few resistant clones are identified, suggesting transmission of individual strains throughout the hospital population. Because person-to-person spread is so important in transmission of MRSA, strategies aimed at preventing transmission of the resistant strains are remarkably effective when strictly enforced. Ceftazidime resistance in Enterobacteriaceae results from point mutations within genes that encode widely prevalent and often transferable plasmid-mediated enzymes. In addition, mutations of these genes that allow hydrolysis of cephalosporins usually result in decreased activity against other drugs, including the penicillins and beta-lactamase inhibitors. Effective measures to control ceftazidime-resistant Enterobacteriaceae have as their cornerstone limiting administration of antibiotics that select for the emergence and spread of these mutations, especially ceftazidime. The importance of infection-control techniques in limiting the prevalence of ceftazidime-resistant Enterobacteriaceae is less well established. Methods that are informed by a detailed understanding of the molecular mechanisms of resistance and resistance spread offer the best hope for limiting dissemination of antibiotic-resistant bacteria in a cost-effective manner.

Rice L.B. et al. *Vancomycin resistance in the enterococcus. Relevance in pediatrics.* Pediatr Clin North Am. 1995; 42(3) : 601-18.p Abstract: Enterococci are nosocomial pathogens intrinsically resistant to a variety of commonly used antimicrobial agents. The frequent use of antimicrobial agents such as cephalosporins has been associated with the increased isolation of enterococci in pediatric hospitals. In addition to their intrinsic resistance traits, the enterococci have rapidly accumulated a variety of acquired resistance determinants. Strains that are resistant to all currently available antibiotics are now being isolated from infected children. The threat of untreatable enterococcal infection and the possibility that vancomycin resistance may spread from the enterococci to the more virulent pneumococci or staphylococci argue for vigilant surveillance for resistant strains, isolation and barrier precautions for infected patients, increased research into the mechanisms of resistance, and a reinvigorated effort to identify new classes of antimicrobial agents.

Richardson D. *Tracking catheters: the care continuum.* J Intraven Nurs. 2000; 23(1) : 35-43.p Abstract: Care coordination and development of a plan to track vascular access devices (VADs) is presented. The article discusses how to establish criteria so that central venous catheters can be monitored. Specific areas of focus for monitoring outcomes are reviewed, as is the process of obtaining invaluable information. This information can be used to support policy and procedure changes and clinical practice changes to provide quality outcomes.

Richter S. et al. *The indwelling ureteric stent: a 'friendly' procedure with unfriendly high morbidity.* BJU Int. 2000; 85(4) : 408-11.p Abstract: OBJECTIVE: To review the morbidity and complications of ureteric stent insertion and to evaluate specifically the effect of an indwelling ureteric stent on the changes in hydronephrosis after stenting. PATIENTS AND METHODS: In a prospective study, 110 renal units with a stent in place were evaluated in 90 patients. Of the 110 stents, 52 were left in place for 3 months, 23 for 6, 11 for 9, 19 for 12 and five (forgotten stents) for 13-30 months. The patients were followed using plain abdominal X-ray at 1 and 30 days after stenting. They were further followed using ultrasonography and plain films every 3 months until the scheduled date for stent removal or the appearance of complications. RESULTS: Thirty-four patients had fever and bacteriuria after stent insertion. Of the 110 stents, 11

(10%) fragmented and nine (8%) migrated. Seventeen patients complained of flank pain on voiding. In 21 renal units (19%) there was no change in the severity of hydronephrosis, whereas in six (5.5%) hydronephrosis developed or worsened after stenting. CONCLUSION: Although ureteric stenting is undoubtedly an important procedure to relieve ureteric obstruction, the indications for stent insertion should be considered carefully in every patient. The close follow-up of stented patients is valuable for the early detection of morbidity or complications and in such cases the stent should be removed or exchanged as soon as possible.

Richter S.S. et al. *A 1997-1998 national surveillance study: Moraxella catarrhalis and Haemophilus influenzae antimicrobial resistance in 34 US institutions.* Int J Antimicrob Agents. 1999; 13(2) : 99-107.p Abstract: From November 1, 1997 to April 30, 1998, 726 Moraxella catarrhalis isolates and 1529 Haemophilus influenzae isolates were obtained from 34 medical centres throughout the United States. Rates of beta-lactamase production were 94.6% among M. catarrhalis and 31.1% among H. influenzae strains. Susceptibility rates of M. catarrhalis isolates to selected antimicrobial agents were greater than 99% for amoxycillin-clavulanate, cefixime, cefpodoxime, cefuroxime, cefaclor, loracarbef, clarithromycin, azithromycin, chloramphenicol and tetracycline, 97.8% for cefprozil, 50.4% for trimethoprim-sulphamethoxazole and 28.1% for ampicillin. Of the antimicrobials tested against H. influenzae, the only agents with susceptibility rates below 96% were loracarbef (87.6%), cefprozil (83.4%), cefaclor (82.7%), trimethoprim-sulphamethoxazole (67.3%) and ampicillin (64.7%). The clarithromycin susceptibility rate was 67.4% but this agent was not tested in the presence of its 14-OH metabolite.

Rifenburg R.P. et al. *Influence of fluoroquinolone purchasing patterns on antimicrobial expenditures and Pseudomonas aeruginosa susceptibility.* Am J Health Syst Pharm. 1999; 56(21) : 2217-23.p Abstract: The influence of using ofloxacin in place of ciprofloxacin on hospital fluoroquinolone expenditures, total antimicrobial expenditures, and susceptibility of Pseudomonas aeruginosa to fluoroquinolones was studied. Hospitals with fluoroquinolone expenditures of at least $1 per occupied bed per year were administered annual surveys covering the years 1993 through 1996. The two most recent consecutive years of data were compared among hospitals that used ciprofloxacin as their primary fluoroquinolone during both years (group 1), hospitals whose ofloxacin purchases increased from accounting for < or =25% of total fluoroquinolone expenditures during year 1 to accounting for >25% during year 2 (group 2), and hospitals whose ofloxacin purchases accounted for at least 25% of total fluoroquinolone expenditures for both years (group 3). A total of 109 hospitals were included in the study. Most hospitals spent more on fluoroquinolones and total antimicrobials in year 2 than year 1. Group 3 hospitals had a significant increase in expenditures for fluoroquinolones and non-fluoroquinolone antipseudomonal antimicrobials. Group 2 hospitals did not realize antimicrobial cost savings and had higher rates of Pseudomonas aeruginosa resistance than hospitals that used ciprofloxacin. Whether a hospital changed its pattern of ciprofloxacin and ofloxacin purchasing was not significantly associated with expenditures for fluoroquinolones, nonfluoroquinolone antimicrobial agents, or all antimicrobials. Susceptibility of P. aeruginosa to ciprofloxacin was lower in hospitals with greater proportions of ofloxacin use. Individual hospital, ciprofloxacin expenditures, and study year were found to be predictive of P. aeruginosa susceptibility to ciprofloxacin among all pooled hospitals.

Rikimaru T. et al. *[Inflammatory reactions and microorganisms cultured from sputum and blood in association with terminal stage infection of patients with lung cancer].* Kansenshogaku Zasshi. 1998; 72(2) : 123-7.p Abstract: We reviewed our experience with terminal stage infections in patients with lung cancer over an 11 year period at Kurume University Hospital. In patients with end-stage lung cancer, the infection is common and a mortal disease. We examined the clinical features and significance of pathogenic microbes isolated from sputum and blood in patients with lung cancer during their last month. Bacteriological examinations from blood done frequently in patients with episodes of fever revealed that bacteremia was one of the most important disease in terminal stage infection. In the blood cultures from the 22 patients various species of pathogenic microbes were recovered, and nine of which were fungi; five Candida albicans, three Candida tropicalis and one Candida parapsilosis. The major species of bacteria isolated from sputum were Staphylococcus aureus, including methicillin-resistant strain, and Gram-negative bacilli; P. aeruginasa, A. calcoaceticus, K. pneumoniae and E. cloacae, which are known to be frequently involved in hospital-acquired infections. However, S. pneumoniae and H. influenzae which were well known to be microbes of respiratory infections were rare. We concluded that we had to reveal the feature of terminal stage infection in order to reduce the fee for medical treatment and improve the QOL of patients with terminal stage lung cancer.

Rikimaru T. et al. *[Microorganisms cultured from sputum and blood in association with episodes of fever during anti-cancer therapy in patients with lung cancer].* Nihon Kyobu Shikkan Gakkai Zasshi. 1995; 33(10) : 1058-63.p Abstract: We examined the clinical features and significance of pathogenic microbes isolated from sputum and blood of patients with lung cancer during anti-cancer therapy. Pathogenic bacteria were more likely to be isolated from patients with episodes of fever than from afebrile patients. The major species of bacteria isolated from sputum were Staphylococcus aureus, including methicillin-resistant strains, and Gram-negative bacilli, which are known to be frequently involved in hospital-acquired infections. The presence of an indwelling central venous catheter for intravenous hyperalimentation was an important risk factor for the development of a febrile episode, which indicates that bacteremia was a major cause of fever. In one quarter of the blood cultures from the patients with persistent fever, various species of pathogenic microbes were recovered, one-third of which were fungi. Bacteriological examinations done before and after the introduction of granulocyte-colony stimulating factor (G-CSF) revealed that strains of Klebsiella spp. decreased and those of methicillin-resistant S. aureus increased. There was no firm evidence that G-CSF decreased the incidence of episodes of fever. However, remains G-CSF may a allow the dose intensity of anticancer agents to be increased, which would lead to severe leukocytopenia. However, more detailed investigation is needed to clarify the role of G-CSF against bacterial infection during anti-cancer therapy.

Rikitomi N. et al. *Rapid increase of pneumococcal resistance to beta-lactam and other antibiotics in isolates from the respiratory tract (Nagasaki, Japan: 1975-1994).* Microbiol Immunol. 1996; 40(12) : 899-905.p Abstract: The susceptibility of 101 pneumococcal isolates from the respiratory tract during 1991-1994 was examined and compared with the susceptibility of isolates over the period of 1975-1990. A rapid increase of resistance was seen not only to penicillin but also other antimicrobial agents. During 1991-1994, 38% of all the isolates were resistant to penicillin. The rates of resistance during this period were 16-23% for three newer cephalosporins, 18% for imipenem, 69% for tetracycline, 31% for erythromycin, 20% for chloramphenicol and 9% for clindamycin. The use of antibiotics within one month prior to pneumococcal isolation was correlated with penicillin resistance ($P < 0.05$). Serotyping of the isolates by antiserum revealed differences in predominant types between penicillin-resistant (19F, 23F,4) and -susceptible isolates (15, 4, 11A). Our data suggests that antipneumococcal antibiotics should be carefully chosen on the basis of susceptibility tests.

Riley M.A. *Molecular mechanisms of bacteriocin evolution.* Annu Rev Genet. 1998; 32 : 255-78.p Abstract: Microorganisms are engaged in a never-ending arms race. One consequence of this intense competition is the diversity of antimicrobial compounds that most species of bacteria produce. Surprisingly, little attention has been paid to the

evolution of such extraordinary diversity. One class of antimicrobials, the bacteriocins, has received increasing attention because of the high levels of bacteriocin diversity observed and the use of bacteriocins as preservatives in the food industry and as antibiotics in the human health industry. However, little effort has been focused on evolutionary questions, such as what are the phylogenetic relationships among these toxins, what mechanisms are involved in their evolution, and how do microorganisms respond to such an arsenal of weapons? The focus of this review is to provide a detailed picture of our current understanding of the molecular mechanisms involved in the process of bacteriocin diversification.

Riley T.V. et al. *Methicillin-resistant Staphylococcus aureus in Western Australia, 1983-1992.* J Hosp Infect. 1995; 29(3) : 177-88.p Abstract: A statewide screening programme has prevented imported strains of methicillin-resistant Staphylococcus aureus (MRSA) from becoming established in any hospital in Western Australia (WA). Recently, notifications of MRSA in WA have increased, prompting a review of surveillance data for the period 1983-1992. Our aims were to determine: (i) the distribution by age and sex of persons with MRSA; (ii) changes in notification rates over time and by location in WA; and (iii) temporal changes in antimicrobial resistance patterns. There were 631 notifications of MRSA for the 10 year period 1983-1992, ranging from a low of 36 in 1988 to a high of 117 in 1992. When the distribution by age and sex was examined, three age group peaks were apparent: 0-9 years, 20-39 years and 60-79 years. There was a predominance of females in the 20-39 years age group, reflecting a greater proportion of hospital nursing staff carrying MRSA. In those aged 50 years or more, there was a marked predominance of males. The highest notification rates overall occurred in the remote Kimberley region of WA, however, rates increased significantly in all regions of the state in 1992. Based on antimicrobial resistance patterns, MRSA was classified into two groups: multiresistant imported strains which often caused outbreaks in hospitals; and a less resistant MRSA (WA MRSA). WA MRSA appears to have originated in the Kimberley region and then spread widely in the community to other regions of the state, and the proportion of WA MRSA has increased significantly since 1989.

Riley U.B. et al. *Quinolone resistance in Oligella urethralis-associated chronic ambulatory peritoneal dialysis peritonitis.* J Infect. 1996; 32(2) : 155-6.p Abstract: Oligella urethralis is an organism which is normally isolated as a commensal from the genitourinary tract. We describe the first two reported cases of CAPD-associated peritonitis caused by this organism. Both isolates were found to be resistant to ciprofloxacin, while relatively sensitive to a wide range of antimicrobial drugs. These findings indicate that this organism may be an opportunistic pathogen for CAPD patients, and that extensive ciprofloxacin usage provides a selection pressure for emergence of resistance.

Rios A.C.S. et al. *Análise epidemiológica da patologias genitais associadas a papilomavírus.* Rev. Assoc. Med. Bras. (1992). 1995; 41(5) : 333-6.p Abstract: Estudando-se casos de infecçoes genitais associadas a papilomavírus em um hospital universitário, verificou-se que as patologias mais frequentes eram o condiloma acuminado e câncer epidermóide. Objetivo. Analisar a prevalência das lesoes genitais associadas a papilomavírus e distribuiçao por sexo, idade e cor. Métodos. Foram estudadas 223 pacientes atendidas no Hospital Universitário Antonio Pedro, estado do Rio de Janeiro, durante os anos de 1988 a 1992. Após diagnóstico clínico, biópsias das pacientes foram submetidas a análise histológica. Resultados. Os resultados mostraram que, entre as doenças do trato genital associadas a papilomavírus, o condiloma acuminado e o carcinoma epidermóide eram as mais frequentes. Os casos de carcinoma epidermóide mantiveram prevalência estável ao longo do período, enquanto que o número de casos condiloma acuminado aumentou de três para 33 por ano. As duas patologias foram mais frequentes em indivíduos de cor branca. Nao houve diferença significativa entre sexo e presença de condiloma. A média de idade para carcinoma epidermóide nao sofreu variaçao significativa no período estudado, enquanto decaiu para o condiloma acuminado nos períodos de 1988 para 1989 e de 1991 para 1992. Conclusao. As lesoes genitais associadas a papilomavírus aumentaram significativamente no período de cinco anos. Maior atençao deve ser dada as campanhas de controle de diagnóstico precoce. (Au).

Rios A.M. et al. *[The impact of antimicrobial resistance and Streptococcus pneumoniae serotype distribution on the mortality of children under 5 years of age with invasive disease].* Rev Panam Salud Publica. 1999; 5(2) : 69-76.p Abstract: Severe pneumonia and meningitis caused by Streptococcus pneumoniae have been persistently associated with high mortality rates, despite advances in antimicrobial therapy and the development of vaccines. Resistance to penicillin and other antimicrobial agents is increasing and spreading worldwide. Even though risk factors for development of antimicrobial resistance have been identified, their influence on mortality has not been clarified. With regard to virulence, differences among serotypes have been determined, but their impact on mortality is unknown. The aim of this study was to determine the risk factors associated with mortality in children with invasive pneumococcal disease. Clinical records for 245 children under 5 years of age with invasive disease due to S.pneumoniae were reviewed. Children were diagnosed between 1994 and 1996 in Colombia, during the study of S.pneumoniae capsular types conducted by the Pan American Health Organization's Regional System for Vaccines. Of the 245 patients whose charts were examined, 29 (11%) died. No significant differences in age, gender, underlying disease, nor antimicrobial treatment concordance were found. Variables associated with mortality in the univariate analysis were a diagnosis of meningitis; antimicrobial resistance to penicillin, trimethoprim-sulfamethoxazole (TMS), or erythromycin; multiresistance, and serotypes 6, 23F, 7F, 8, and 35B. In the logistic regression, serotypes 7F (OR = 7.13; P = 0.04) and 8 (OR = 13.8; P = 0.07), polipnea (OR = 2.74; P = 0.03), meningitis (OR = 5.02; P = 0.0001) and TMS resistance (OR = 2.62; P = 0.02) continued to be associated with mortality. In patients with pneumonia, serotype was the factor most consistently associated with mortality; in meningitis patients, it was antimicrobial resistance. Differences in mortality according to serotype must be taken into account in developing a vaccine if a substantial impact on pneumococcal disease morbidity and mortality is to be achieved.

Ritz M. et al. *High hydrostatic pressure inactivation of Salmonella typhimurium: effects of pressure, duration, pH and temperature studied by analysis of variance.* Vet Res. 1998; 29(6) : 547-56.p Abstract: High hydrostatic pressure treatments are regarded as possible alternative methods for food preservation. One of the primary considerations for industrial applications is the ability of these methods to eradicate pathogenic microorganisms. This study subjected S. typhimurium suspensions, first in a phosphate buffer (pH 7.0) and then in a citrate phosphate buffer (pH 5.6), to high hydrostatic pressure treatments relative to the following variables: pressure (200-400 MPa), duration (3, 10 and 20 min), temperature (4, 20 and 40 degrees C) and the pH of the suspension medium (5.6 and 7.0). An optimal design of 40 runs was obtained using the Fedorov algorithm, and responses were studied by analysis of variance in terms of cell survival on plate count agar. Efficiency was determined by Log10 comparisons of the numbers of live cells before and after treatment. A statistically significant relationship was found between the four variables considered (pressure, pH, duration and temperature), their interactions (duration x pressure, pH x temperature, pH x pressure) and the inactivation of S. typhimurium. R-squared statistical analysis indicated that the linear model used accounted for more than 98% of the variability in the inactivation of S. typhimurium.

Rivas Espinoza V.G. et al. *Resistencia antimicrobiana de Eschirichia coli uropatógena aislada de pacientes comunitarios.* Rev. mex. patol. clín. 1998; 45(4) : 201-5.p Abstract: Antecedentes. La epidemiología de la resistencia antimicrobiana en el ambiente hospitalario ha sido

motivo de innumerables publicaciones, sin embargo, con respecto a microorganismos de origen comunitario la información es menos abundante. Objetivo. Precisar la frecuencia con que Escherichia Coli resulta no susceptible a los 14 antimicrobianos habitualmente empleados, en urocultivos practicados a población comunitaria. Material y métodos. Con el método de Kirby Bauer estandarizado por NCCLS, se evaluó la susceptibilidad a 14 antibióticos en un total de 404 cepas de Eschirichia coli procedentes de urocultivos con cuentas mayores a 100,000 UFC/mL. De éstas, 71% se aislaron en el laboratorio del Hospital General de Zona número 11 del IMSS (HGZ II) y 20% en el departamento de microbiología de Laboratorios Rivas S. de R.L. de C. V. (LRI). Resultados. Se demostró que en promedio existe resistencia a 24.7 por ciento de los antimicrobianos; ser más evidente en el medio hospitalario que en la comunidad (Delta + 6.2); con influencia de la edad del paciente (R=0.99) y que afecta de manera diferente y específica en cada uno de los antimicrobianos. Conclusión. La resistencia antimicrobiana de Eschirichia Coli uropatógena es un problema clínico significativo. Es conveniente que en nuestro país se haga un esfuerzo por regular el uso de antibióticos dentro y fuera de los hospitales(AU).

Rizvi M.A. et al. *Complications of plasma exchange in 71 consecutive patients treated for clinically suspected thrombotic thrombocytopenic purpura-hemolytic-uremic syndrome.* Transfusion. 2000; 40(8) : 896-901.p Abstract: BACKGROUND: With the increased frequency of diagnosis and improved survival of thrombotic thrombocytopenic purpura-hemolytic-uremic syndrome (TTP-HUS), the morbidity of plasma exchange (PE) treatment has become more important. STUDY DESIGN AND METHODS: Data were prospectively collected on 71 consecutive patients referred to the Oklahoma Blood Institute (OBI) for PE treatment for clinically suspected TTP-HUS from mid-1996 to mid-1999. Complications were defined as major or minor, and distinguished between those related to central venous catheter access or to the plasma. RESULTS: Twenty-one patients (30%) had 27 major complications, which caused two deaths. The major complications included 2 episodes of hemorrhage after subclavian line insertion (1 death), 1 pneumothorax requiring a chest tube, 12 systemic infections (1 death), 7 episodes of catheter thrombosis requiring removal of the central venous catheter, 2 episodes of venous thrombosis requiring anticoagulant treatment, 2 episodes of hypoxemia and hypotension, and 1 episode of serum sickness. Minor complications occurred in 22 additional patients (31%). Twenty-eight patients (39%) had no complications. CONCLUSIONS: The morbidity and mortality of catheter placement and PE are important considerations when PE treatment for clinically suspected TTP-HUS is anticipated.

Robert J. et al. *The influence of the composition of the nursing staff on primary bloodstream infection rates in a surgical intensive care unit*. Infect Control Hosp Epidemiol. 2000; 21(1) : 12-7.p Abstract: OBJECTIVES: To determine the risk factors for acquisition of nosocomial primary bloodstream infections (BSIs), including the effect of nursing-staff levels, in surgical intensive care unit (SICU) patients. DESIGN: A nested case-control study. SETTING: A 20-bed SICU in a 1,000-bed inner-city public hospital. PATIENTS: 28 patients with BSI (case-patients) were compared to 99 randomly selected patients (controls) hospitalized > or =3 days in the same unit. RESULTS: Case- and control-patients were similar in age, severity of illness, and type of central venous catheter (CVC) used. Case-patients were significantly more likely than controls to be hospitalized during a 5-month period that had lower regular-nurse-to-patient and higher pool-nurse-to-patient ratios than during an 8-month reference period; to be in the SICU for a longer period of time; to be mechanically ventilated longer; to receive more antimicrobials and total parenteral nutrition; to have more CVC days; or to die. Case-patients had significantly lower regular-nurse-to-patient and higher pool-nurse-to-patient ratios for the 3 days before BSI than controls. In multivariate analyses, admission during a period of higher pool-nurse-to-patient ratio (odds ratio [OR]=3.8), total parenteral nutrition (OR=1.3), and CVC days (OR=1.1) remained independent BSI risk factors. CONCLUSIONS: Our data suggest that, in addition to other factors, nurse staffing composition (ie, pool-nurse-to-patient ratio) may be related to primary BSI risk. Patterns in intensive care unit nurse staffing should be monitored to assess their impact on nosocomial infection rates. This may be particularly important in an era of cost containment and healthcare reform.

Robert R. et al. *Nosocomial pneumonia with isolation of anaerobic bacteria in ICU patients: therapeutic considerations and outcome.* J Crit Care. 1999; 14(3) : 114-9.p Abstract: PURPOSE: Evaluate the influence of the anti-anaerobic antimicrobial therapy in the outcome of patients with nosocomial pneumonia. MATERIALS AND METHODS: The population study included 53 intensive care unit patients with nosocomial pneumonia in whom, using a protected specimen brush, anaerobic bacteria were isolated, which were associated or not with aerobes. Current and empirical antibiotherapies were retrospectively analyzed, regarding their efficacy against anaerobic bacteria. Since it was debated, sensitivity to cefotaxime, ceftazidime, and ciprofloxacin was determined in 38 strains of Prevotella species. Outcome was evaluated 10 days after the day of protected specimen brushes. Improvement was defined as a decrease of Murray score or ventilator weaning. Results: The most frequently isolated bacteria were Prevotella species, which were more frequently resistant to cefotaxime (37%), ceftazidime (50%), and ciprofloxacine (32%) than usually reported in the literature. Sixty-six percent of these strains produced beta-lactamase. The effect of empirical anti-anaerobic antibiotherapy on the outcome at day 10 was evaluable in 39 patients. Twenty-nine patients were improved and 10 patients worsened. Interestingly, patients who had received well-adapted antibiotics against anaerobes had a better outcome after 10 days (P <.02). CONCLUSIONS: This study suggests that specific antianaerobic therapy may be considered in the choice of empirical antibiotherapy in patients with nosocomial pneumonia.

Roberts G.J. et al. *Bacteremia of dental origin and antimicrobial sensitivity following oral surgical procedures in children*. Pediatr Dent. 1998; 20(1) : 28-36.p Abstract: METHODS: The prevalence and intensity of bacteremia of dental origin were examined in 207 children divided into four groups: a baseline with no surgical intervention (group I), after a single tooth extraction (group II), multiple tooth extraction (group III), and mucoperiosteal flap elevation (group IV). The bacterial isolates were grown using a broth culture (Bactec) and lysis centrifugation (Paediatric Isolator) techniques. Dental plaque deposits, gingivitis, spontaneous gingival bleeding and the presence/absence of a dental abscess were recorded and their relationship to bacteremia assessed. RESULTS: The broth culture was positive for group I 11% of the time, group II for 43%, group III for 54%, and group IV for 43%. The Paediatric Isolator system was found to be a poor method for detecting bacteremia, having only one quarter the sensitivity of the broth culture technique. When organisms were isolated, the intensity of bacteremia ranged from 1 to 3400 colony forming units per milliliter (cfu/mL). Bacterial isolates were susceptible to most of the antibiotics recommended for antibiotic prophylaxis, but erythromycin, gentamycin, penicillin G, and teicoplanin were only 80% (or less) effective in their efficacy while chlorhexidine, amoxicillin, clindamycin, and vancomycin were between 92 and 100% effective. CONCLUSIONS: The antibiotics commonly used for an oral and/or parenteral prophylaxis are likely to be effective on at least 80% of occasions with most of them effective on 100% of occasions.

Robinson M. *Medical therapy of inflammatory bowel disease for the 21st century.* Eur J Surg Suppl. 1998; (582) : 90-8.p Abstract: Inflammatory bowel disease therapy can be considered in several subcategories, and this review is designed to provide selective updates for some of the most important therapeutic entities currently marketed or soon to be available for the medical management of IBD. Although conven-

tional corticosteroids have been a major component of acute inflammatory bowel disease management, steroids have many serious disadvantages; and toxicity is heightened with chronic steroid therapy. Newer corticosteroids, particularly budesonide, may be less toxic than older agents such as prednisone. Budesonide may be used as an enema in active distal ulcerative colitis (UC) or as delayed release tablets in Crohn's disease (CD). However, budesonide is not completely free from steroid side effects, and may share in some of the toxicity of older corticosteroids, particularly when high dose budesonide is administered. Topical and oral aminosalicylates are widely utilized for the treatment of mild to moderate active UC and mild active CD, and they also are efficacious for maintenance of IBD remission. Recent data continue to support the concept that higher doses and prolonged use of mesalamine-based drugs are therapeutically superior to lower doses and short term treatment. In addition, the combination of oral and rectal aminosalicylate formulations often succeeds in patients refractory to either used alone. The immunomodulatory drugs azathioprine and 6-mercaptopurine are particularly effective in treating both CD and UC, and methotrexate has also shown some promise in CD therapy. Immunosuppressive therapy for inflammatory bowel disease initially met with strong physician resistance. However, views have shifted in response to positive data on the utility of immunosuppressive agents in many cases of IBD. Although cyclosporine may be used as a 'rescue' medication in some severe IBD cases, it has been associated with severe toxic reactions. Possible candidates for cyclosporine treatment should be offered such therapy only in academic centers highly experienced with the nuances of this modality. Clinical trials of the newer entities IL-10, IL-11, tacrolimus, and anti-TNFalpha, have demonstrated variable efficacy in refractory IBD patients. Anti-TNFalpha has been very impressive, particularly in the presence of fistulizing Crohn's disease. Many physicians have utilized various antibiotics empirically as part of their 'general' management of IBD. Only metronidazole has been adequately studied in controlled CD trials, but other antibiotic studies are pending. Further exploration of antimicrobial treatment for IBD is clearly warranted. Many other investigational agents in disparate pharmaceutical categories have been employed in IBD therapy; and some of these also show varying degrees of promise, including the aloe vera derivative acemannan, several formulations of heparin, and both transdermal and intra-rectal nicotine. Despite the growing list of medications and formulations promoted for the treatment of IBD, no single drug or recognized combination has yet been confirmed as dependably clinically effective. Many additional investigations of IBD medical therapy are needed, including permutations of conventional medications, along with newer agents that may be more precisely targeted to specific aspects of IBD pathophysiology. All physicians who care for UC and CD patients enthusiastically await more optimal regimens for these challenging disorders.

Rodas L. et al. *Hallazgo de bacteriars multiresistentes en unidades de cuidados intensivos del Hospital de Clínicas, Asunción, Paraguay.* Rev. paraguaya microbiol. 1998; 18(1) : 37-9.p Abstract: Se analizó la presencia de basilos gram negativos en tres unidades de cuidados intensivos del Hospital de Clínicas de Asunción, entre los meses de setiembre octubre del 1996. resultaron con cultivos pósitivos 17 porciento de un total de 65 muestras, siendo germenes aislados, según frecuencia, pseudomonas aeruginosa, enterobacter aerogenes y escherichia coli. Los cultivos para gérmenes ambientales fueron negativos. El total microorganismos aislados el 20 porciento presento multirresistencia a los antimicrobianos.

Rodgers G.L. et al. *In vitro susceptibility testing of topical antimicrobial agents used in pediatric burn patients: comparison of two methods.* J Burn Care Rehabil. 1997; 18(5) : 406-10.p Abstract: One hundred and seventy-seven bacterial isolates obtained from pediatric burn victims were tested for in vitro susceptibility against bacitracin, silver sulfadiazine, mafenide acetate, nitrofurazone, and mupirocin by two methods: standard microbroth dilution and Nathan's agar well diffusion (NAWD). Nitrofurazone had the broadest spectrum of activity. Mupirocin was the most potent agent against methicillin-susceptible Staphylococcus aureus. Silver sulfadiazine showed activity against gram-positive organisms and higher minimum inhibitory concentration (MIC) values, and smaller zone sizes were seen for methicillin-resistant S. aureus and gram-negative bacilli. Bacitracin showed activity against S. aureus and Streptococcus pyogenes by the microbroth method; activity could not be assessed by NAWD. Mafenide acetate had the highest MICs for all isolates tested. Correlation between methods for all isolates tested was best for mupirocin and nitrofurazone. NAWD was labor intensive and difficult to interpret; MIC method was easy to perform and reproducible. Clinical correlation is necessary to establish breakpoints for interpretation of test results.

Rodriguez Castro G. et al. *[Descriptive study of infections caused by central venous catheters with peripheral insertion].* Enferm Intensiva. 1998; 9(3) : 115-20.p Abstract: OBJECTIVE: To know the infection rate for central venous catheters inserted via a peripheral vein (CVCIPV), the microorganisms involved, and the incidence of complications derived from catheter infections. METHOD: A prospective study carried out in the ICU of the Hospital de la Princesa in 1997. Clinical and microbiological data were collected from all patients with CVCIPC. Cultures were made of the intravascular segment (semiquantitative-quantitative procedure) and blood if symptoms or signs of infection were observed. Data were recorded from 72 catheters in 72 patients. RESULTS: Fifty-one (70.8%) catheters were cultured, of which 47 (92.15%) were sterile. Infection was associated with the catheter in 3 cases (5.8%) and bacteremia, which was complicated by septic shock, was associated with the catheter in 1 case (1.4%). The microorganisms found were Serratia marcescens, Morganella morgani, and Staphylococcus epidermidis. CONCLUSION: Central venous catheterization via a peripheral vein had a low rate of infectious complications.

Rodriguez Guardado A. et al. *[Bacteremia in patients undergoing chronic hemodialysis in a 16-year period].* Rev Clin Esp. 1997; 197(7) : 484-9.p Abstract: OBJECTIVE: To determine the incidence of bacteremia among patients on hemodialysis, the responsible microorganisms and to describe the predisposing and prognostic factors. METHODS: A retrospective analysis was conducted of 85 episodes of bacteremia occurred from 1979-1994; the episodes involved 71 patients (male/female ratio: 27/44) with a mean age of 58 years (29-80). RESULTS: Eighty-seven microorganisms were recovered, which included 61 grampositive cocci (67% Staphylococcus aureus), 25 gramnegative bacilli (52% Escherichia coli) and 1 anaerobe. The mean incidence was 3.1/100 patients on hemodialysis/year (range: 1.1-8.3), higher in patients with interstitial and cystic renal disease. In 52% of cases an intravascular source was detected, associated with vein access for hemodialysis (in 91% there were inflammatory signs at the fistula). In 16 cases (19%) no portal of entry was detected and in the remaining patients the portal of entry had an extravascular origin. Eighty patients received antibiotic therapy and 35 patients required the substitution of the vein access. Thirteen patients died (15%) as a result of bacteremia. The mortality rate was higher among patients developing shock (50%), endocarditis (75%) and in those who had remained for longer than 1,000 days on hemodialysis (45%). Bacteremia accounted for the third known cause of death on dialysis, and was responsible for 11% of deaths occurred during the time of the study. CONCLUSIONS: Bacteremia among hemodialysed patients was mainly associated with Staphylococcus aureus infections at the vascular access. Bacteremia was the direct responsible for 11% of deaths occurred on dialysis.

Rodriguez J.A. et al. *The function of permanent vascular access.* Nephrol Dial Transplant. 2000; 15(3) : 402-8.p Abstract: BACKGROUND: Complications arising from vascular access (VA) are major causes of morbidity in patients on renal replacement therapy (RRT). They contribute to frustration of health care providers and to high medical cost. To prevent failures in the future it will be help-

ful to identify the factors that are related to VA malfunction. METHODS: In a retrospective analysis we analysed the types, duration and primary rate of patency of 1033 permanent vascular accesses in 544 consecutive patients established during a 13-year period in a tertiary care hospital. Patient characteristics, incidence, and risk factors related to VA failure were registered. In addition, VA outcomes in patients who started haemodialysis with a catheter and in whom initial VA failure occurred were analysed separately. RESULTS: Forty-five per cent of patients required a central catheter at the start of HD, but 92% of them were being dialysed with an a-v fistula at the last observation. The total number of complications was 0.24 episodes per patient per year at risk and the rate of thrombosis 0.1. A total of 52% of patients were dialysed throughout the observation period with their initial a-v fistula; 9.3% had more than three episodes of VA failure. The radiocephalic a-v fistula was the VA with the best median duration, exceeding 7 years, but also the type that had the highest initial failure rate, i.e. 25% of patients and 13% of the events. The brachiocephalic a-v fistula was the second most frequent type of VA, with a median duration of function of 3.6 years, in contrast to the humerobasilic a-v fistula, which exceeded 5 years. Average patency of the different types of grafts did not exceed 1 year, with the exception of the autologous saphenous graft with a median duration of function of 1.4 years. Patients with glomerulonephritis had the best function rates for their VA, the median exceeding the duration of the study, whereas in half of the diabetic patients it was less than 1 year. The duration of patency of the VA was twice in patients below age 65 years and in elderly males compared to elderly females. Patients who started HD with a catheter, as well as those with initial VA failure, had a higher rate of VA failure in the subsequent course on RRT. CONCLUSION: The radiocephalic and the humerobasilic a-v fistulae are the two types of VA with the longest duration of function, although a high rate of initial failure is seen with the radiocephalic a-v fistula. Age, female gender, presence of diabetic nephropathy, start of dialysis with a catheter, and failure to wait for initial maturation of the VA are risk factors, and account for the majority of VA failures during RRT.

Rodriguez R.S. et al. *[Antimicrobial resistance characteristics of clinical isolates of Streptococcus pyogenes].* Salud Publica Mex. 2000; 42(3) : 226-9.p Abstract: OBJECTIVE: To determine the antibiotic susceptibility of recent isolates of Streptococcus pyogenes and to evaluate the prevalence of macrolide-resistant phenotypes. MATERIAL AND METHODS: In 1999, we conducted a cross-sectional study at Mexico Children's Hospital "Federico Gomez", to analyze one hundred strains of S. pyogenes isolated from 1992 to 1998, in children with uncomplicated pharyngotonsillitis. Strains were frozen at the bacteriology lab until they were analyzed. Strains were tested for susceptibility against some beta-lactams, macrolides and clindamycin. Double-disk testing was carried out to evaluate erythromycin-resistant phenotypes. Data are presented using central tendency measures. RESULTS: All tested strains were not resistant to beta-lactams and clindamycin; 16% of the strains were resistant to macrolides and all of them belonged to phenotype M. CONCLUSIONS: Susceptibility testing is recommended to identify possible changes in antibiotic resistance to streptococci.

Rodriguez W.J. et al. *Streptococcus pneumoniae resistant to penicillin: incidence and potential therapeutic options.* Laryngoscope. 1995; 105(3 Pt 1) : 300-4.p Abstract: Streptococcus pneumoniae was recovered from 12 (50%) samples of middle ear fluid of 24 consecutive patients with AOME and in mixed culture of middle ear pathogens from one (4%) additional specimen. Two (15.3%) isolates had intermediate resistance to penicillin (minimal inhibitory concentration (MIC) 0.125 and 1.0 micrograms/mL). The antimicrobial susceptibility to various antimicrobials of 30 S pneumoniae strains recovered from patients seen in the last 12 months was also determined. One of the patients with AOME developed bacteremia that resolved uneventfully, whereas the other developed meningitis. MIC90 was determined from penicillin (2 micrograms/mL), erythromycin (> 32 micrograms/mL), cefaclor (32 micrograms/mL), loracarbef (> or = 64 micrograms/mL), cefixime (16 micrograms/mL), ceftibuten (> 64 micrograms/mL), chloramphenicol (16 micrograms/mL), cefpodoxime (4 micrograms/mL), ciprofloxacin (2 micrograms/mL), cephalexin (> or = micrograms/mL), augmentin (2 micrograms/mL), cefprozil (8 micrograms/mL), clindamycin (64 micrograms/mL), TMP-SXT (> 64 micrograms/mL), clarithromycin (32 micrograms/mL), rifampin (0.06 micrograms/mL), cefuroxime (2 micrograms/mL), cefotaxime (0.25 micrograms/mL), vancomycin (0.25 micrograms/mL), and imipenem (0.5 micrograms/mL). Cefprozil, vancomycin, and rifampin inhibited all strains, whereas cefpodoxime, cefuroxime, clindamycin, and clarithromycin exhibited very good activity.

Rodriguez W.J. et al. *Increasing incidence of penicillin- and ampicillin-resistant middle ear pathogens.* Pediatr Infect Dis J. 1995; 14(12) : 1075-8.p Abstract: During a 13-month period ending in January, 1995, we obtained 159 samples of middle ear exudate through tympanocentesis (n = 155) or acute spontaneous otorrhea (n = 4) from 151 children enrolled in therapeutic trials of acute otitis media in a pediatric practice in Northern Virginia. Their ages ranged from < 1 to > 6 years of age (mean, 35 months; median, 22 months). Precise diagnostic criteria for acute otitis media always included bulging outward of all or part of the eardrum, opacification of the eardrum regardless of color and impaired mobility to positive and negative pressure via the pneumatic otoscope. Bacterial pathogens were isolated from middle ear fluid in 95% of these children: Streptococcus pneumoniae was recovered from 61 (37%); Haemophilus influenzae from 45 (27%); Moraxella catarrhalis from 41 (25%); Group A streptococcus from 6 (4%); Staphylococcus aureus from 4 (2%); and no growth or microbes of uncertain significance from 8 (5%). Six of the patients had mixed bacterial cultures; 2 of the 6 had at least one ampicillin-resistant bacteria, and a third had 2 ampicillin-resistant bacteria. Eight patients who failed to improve with antimicrobial treatment had a second tympanocentesis performed or developed spontaneous drainage; on that follow-up culture 3 of 8 cultures had different microorganisms; and 5 of the 8 bacterial specimens were resistant to ampicillin or penicillin. Twenty-one percent of the S. pneumoniae strains recovered from the middle ear were resistant to penicillin. Sixty-two percent of the H. influenzae and 98% of the M. catarrhalis isolates were resistant to ampicillin. Overall bacteria resistant to penicillin or ampicillin were recovered in 54% of middle ear fluid from 46 patients who had received a beta-lactam antibiotic in the preceding month as well as in 57% of middle ear fluids from 105 patients who had not. The empiric use of amoxicillin for treatment of acute otitis media should be reexamined in our community particularly in those who appear ill, have a high fever or have severe unremitting otalgia.

Rogers P.L. et al. *Medical students can learn the basic application, analytic, evaluative, and psychomotor skills of critical care medicine.* Crit Care Med. 2000; 28(2) : 550-4.p Abstract: OBJECTIVE: To determine whether fourth-year medical students can learn the basic analytic, evaluative, and psychomotor skills needed to initially manage a critically ill patient. DESIGN: Student learning was evaluated using a performance examination, the objective structured clinical examination (OSCE). Students were randomly assigned to one of two clinical scenarios before the elective. After the elective, students completed the other scenario, using a crossover design. SETTING: Five surgical intensive care units in a tertiary care university teaching hospital. PARTICIPANTS: Forty fourth-year medical students enrolled in the critical care medicine (CCM) elective. INTERVENTIONS: All students evaluated a live "simulated critically ill" patient, requested physiologic data from a nurse, ordered laboratory tests, received data in real time, and intervened as they deemed appropriate. MEASUREMENTS AND MAIN RESULTS: Student performance of specific behavioral objectives was evaluated at five stations. They were expected to a) assess airway, breathing, and circulation in appropriate sequence; b) prepare a manikin for intubation, obtain an

acceptable airway on the manikin, demonstrate bag-mouth ventilation, and perform acceptable laryngoscopy and intubation; c) provide appropriate mechanical ventilator settings; d) manage hypotension; and e) request and interpret pulmonary artery data and initiate appropriate therapy. OSCEs were videotaped and reviewed by two faculty members masked to time of examination. A checklist of key behaviors was used to evaluate performance. The primary outcome measure was the difference in examination score before and after the rotation. Secondary outcomes included the difference in scores at each rotation. The mean preelective score was 57.0%+/-8.3% compared with 85.9%+/-7.4% (p<.0001) after the elective. Significant improvement was demonstrated at each station except station I. CONCLUSION: Fourth-year medical students without a CCM elective do not possess the basic cognitive and psychomotor skills necessary to initially manage critically ill patients. After an appropriate 1-month CCM elective, students' thinking and application skills required to initially manage critically ill patients improved markedly, as demonstrated by an OSCE using a live simulated "patient" and manikin.

Roghmann M.C. et al. *Clostridium difficile infection is a risk factor for bacteremia due to vancomycin-resistant enterococci (VRE) in VRE-colonized patients with acute leukemia.* Clin Infect Dis. 1997; 25(5) : 1056-9.p Abstract: A cohort study was conducted in a cancer center to identify risk factors for bacteremia with vancomycin-resistant enterococci (VRE) in neutropenic cancer patients colonized with VRE. There were 10 patients with VRE bacteremia among 56 colonized with VRE, of whose charts 51 were available for review. One hundred percent of patients with VRE bacteremia (10 of 10) vs. 56% of patients without VRE bacteremia (23 of 41) had acute leukemia (P =.01, Fisher's exact test). Four of the 10 patients with VRE bacteremia had a positive Clostridium difficile toxin assay within 6 days of their first positive VRE blood culture. Both C. difficile infection and antimicrobial (vancomycin and ciprofloxacin) use during VRE colonization were significant risk factors for VRE bacteremia in univariate analysis. When a Cox proportional hazards model was used to account for differences in follow-up time, C. difficile infection was the only statistically significant risk factor (risk ratio, 8.2; P =.007) for VRE bacteremia in VRE-colonized patients with acute leukemia.

Rohner P. et al. *Evaluation of the MB/BacT system and comparison to the BACTEC 460 system and solid media for isolation of mycobacteria from clinical specimens.* J Clin Microbiol. 1997; 35(12) : 3127-31.p Abstract: The MB/BacT automated system is designed for the isolation of mycobacteria from clinical specimens. It utilizes a colorimetric sensor and reflected light to continuously monitor the CO2 concentration in the culture medium. We compared its performance to that of the BACTEC 12B media for the radiometric BACTEC 460 instrument and that of solid culture media. Respiratory specimens and urine samples were decontaminated with 4% NaOH. The vials of the two instruments were inoculated with 500 microl of sample and two solid egg-based media at 200 microl each. All vials were incubated at 37 degrees C for 6 weeks. A total of 1,078 specimens (633 respiratory specimens, 78 cerebrospinal fluid specimens, 177 other body fluid specimens, 87 urine specimens, and 103 other types of specimens) were cultured in parallel. Mycobacteria could be identified from 73 (6.8%) specimens: 67 M. tuberculosis, 3 M. kansasii, 1 M. xenopi, 1 M. terrae, and 1 mixed M. avium with M. scrofulaceum. Of these, 63 (86.3%) specimens were positive with the MB/BacT system, 67 (91.8%) were positive with the BACTEC 460 instrument, and 58 (79.5%) were positive with the two egg-based media. MB/BacT cultures were positive on average after 17.5 (+/-6.4) days, BACTEC cultures with a growth index of >20 (mean, 200) were positive after 14.3 (+/-8.2) days, and egg-based media were positive after 24.2 (+/-7.5) days. Microorganisms other than mycobacteria contaminated 46 (4.3%) MB/BacT cultures and 31 (2.9%) BACTEC cultures, which had to be discarded. The MB/BacT system is a well-automated system for the detection of M. tuberculosis in clinical specimens without using radioactive reagents. Further trials are required to determine whether it is suitable for the culture of nontuberculous mycobacteria.

Rojas I.A. et al. *Polyurethane coatings release bioactive antibodies to reduce bacterial adhesion.* J Controlled Release. 2000; 63(1-2) : 175-89.p Abstract: This study describes the formulation of a biomedical grade polyurethane hydrogel coating containing solid dispersed bioactive antibodies cast from an organic solvent onto a model polymer biomaterial substrate. A prepolymer dispersion in anhydrous isopropanol containing a uniformly distributed slurry of 22 microm sieved commercial lyophilized polyclonal pooled human immunoglobulin G (IgG) solids was coated onto polymer substrates by simple immersion. Maximum antibody release was approximately 50 microg/cm(2) from a 15% w/w IgG polymer coating. In vitro antimicrobial studies utilized Escherichia coli to compare performance of bare uncoated tubing, hydrogel-coated tubing with added aqueous phase antibodies, and antibody-dispersed hydrogel-coated tubing. Bacterial adhesion was reduced significantly (p<0.05) in the presence of antibodies with the greatest reduction seen with the antibody releasing coating. The presence of antibody also significantly enhanced the killing of the bacteria in an in vitro opsonophagocytic assay using freshly isolated blood neutrophils over 2 h indicating that antibody bioactivity is maintained. This controlled release polyurethane hydrogel coating imparts infection resistance by exploiting the low adhesive properties of the biomedical grade hydrogel and the intrinsic bioactive role of the antibodies to reduce bacterial adhesion and promote clearance via natural immune mechanisms.

Rojo D. et al. *Analysis of risk factors associated with nosocomial bacteraemias.* J Hosp Infect. 1999; 42(2) : 135-41.p Abstract: A prospective study of 2676 blood cultures was performed to identify the factors associated with clinically, significant nosocomial bacteraemia that occurred during a one year period in the Malaga University Clinical Hospital. Three hundred and fifty-five episodes of bacteraemia were considered clinically significant. The overall incidence of bacteraemia was 19.5/1000 admissions, of which 46% were hospital-acquired. A multivariate model showed that only six factors were significantly, and independently, responsible for nosocomial bacteraemias: intravascular catheterization (P < 0.0001, OR = 18.37), invasive procedures (P < 0.0001, OR = 10.38), malignancy (P = 0.035, OR = 3.11), indwelling devices (P = 0.005, OR = 3.05), stay in intensive care or surgical departments (P = 0.05, OR = 2.63) and length of hospital stay (P = 0.051, OR = 1.02). These results show that the factors which had most influence on the development of nosocomial bacteraemias were those factors associated with the treatment received by patients during their hospital stay.

Roland R.K. et al. *In vitro antimicrobial activity of Piperacillin/Tazobactam in comparison with other broad-spectrum beta-lactams.* Braz J Infect Dis. 2000; 4(5) : 226-35.p Abstract: Combining tazobactam, a beta-lactamase inhibitor, with the ureidopenicillin, piperacillin, successfully restores the activity of piperacillin against beta-lactamase producing bacteria. Thus, piperacillin/tazobactam is highly active against most clinically important species of Gram-negative and Gram-positive bacteria, including anaerobes. We evaluated the in vitro activity of piperacillin/tazobactam against clinical isolates from a tertiary university hospital located in Sao Paulo, Brazil. Its activity was compared to that of ticarcillin/clavulanic acid, ampicillin/sulbactam, ceftazidime, ceftriaxone, cefotaxime, cefoxitin, aztreonam, and imipenem against 820 isolates (608 Gram-negative and 212 Gram-positive) collected from hospitalized patients in 1999. The most frequent species tested were Pseudomonas aeruginosa (168/20%), Escherichia coli (139/17%), Acinetobacter spp. (131/16%), and Staphylococcus aureus (76/9%). Of the isolates studied, 30% were from the bloodstream, 16% from the lower respiratory tract, and 11% from surgical wounds or soft tissue. The isolates were susceptibility tested by the broth microdilution method according to NCCLS procedures. The isolates tested were highly resistant to most antimicrobial agents evaluated.

Imipenem resistance was not verified among Enterobacteriaceae, and piperacillin/tazobactam was the second most active beta-lactams against this group of bacteria (80.0% susceptibility). Extended-spectrum beta-lactamase production was very high among E. coli (approximately 20%) and Klebsiella pneumoniae (approximately 40%). Imipenem was uniformly active against these species (100% susceptibility) and piperacillin/tazobactam was the second most active compound inhibiting 84.4% of isolates. Pseudomonas aeruginosa was highly resistant to all beta-lactams evaluated and piperacillin/tazobactam was the most active compound against this species. Our results demonstrate an extremely high level of antimicrobial resistance in the hospital evaluated, especially among non-enteric Gram-negative bacilli. Due to this high level of resistance, piperacillin/tazobactam represents an important contribution to the treatment of nosocomial infections.

Rolfe R.D. *The role of probiotic cultures in the control of gastrointestinal health*. J Nutr. 2000; 130(2S Suppl) : 396S-402S.p Abstract: The use of probiotics to enhance intestinal health has been proposed for many years. Probiotics are traditionally defined as viable microorganisms that have a beneficial effect in the prevention and treatment of specific pathologic conditions when they are ingested. There is a relatively large volume of literature that supports the use of probiotics to prevent or treat intestinal disorders. However, the scientific basis of probiotic use has been firmly established only recently, and sound clinical studies have begun to be published. Currently, the best-studied probiotics are the lactic acid bacteria, particularly Lactobacillus sp. and Bifidobacterium sp. However, other organisms used as probiotics in humans include Escherichia coli, Streptococcus sp., Enterococcus sp., Bacteroides sp., Bacillus sp., Propionibacterium sp. and various fungi. Some probiotic preparations contain mixtures of more than one bacterial strain. Probiotics have been examined for their effectiveness in the prevention and treatment of a diverse spectrum of gastrointestinal disorders such as antibiotic-associated diarrhea (including Clostridium difficile-associated intestinal disease), infectious bacterial and viral diarrhea (including diarrhea caused by rotavirus, Shigella, Salmonella, enterotoxigenic E. coli,Vibrio cholerae and human immunodeficiency virus/acquired immunodeficiency disorder, enteral feeding diarrhea, Helicobacter pylori gastroenteritis, sucrase maltase deficiency, inflammatory bowel disease, irritable bowel syndrome, small bowel bacterial overgrowth and lactose intolerance. Probiotics have been found to inhibit intestinal bacterial enzymes involved in the synthesis of colonic carcinogens. There are many mechanisms by which probiotics enhance intestinal health, including stimulation of immunity, competition for limited nutrients, inhibition of epithelial and mucosal adherence, inhibition of epithelial invasion and production of antimicrobial substances. Probiotics represent an exciting prophylactic and therapeutic advance, although additional investigations must be undertaken before their role in intestinal health can be delineated clearly.

Rolston K.V. et al. *Survey of antibiotic susceptibility among gram-negative bacilli at a cancer center.* Chemotherapy. 1996; 42(5) : 348-53.p Abstract: A survey of the susceptibility of gram-negative bacilli isolated from cancer patients to broad-spectrum antimicrobial agents was conducted. The organisms were isolated from all patient specimens submitted to the microbiology laboratory during a 3-month study period. Overall, the least resistance was observed against cefoperazone/sulbactam, ciprofloxacin, and imipenem. Of these, cefoperazone/sulbactam has had limited usage at our institution. Drugs used more frequently (piperacillin, aztreonam, cefoperazone, ceftazidime) were associated with greater levels of resistance. Imipenem and ciprofloxacin have enjoyed wide usage but the level of resistance remains low.

Roman R.S. et al. *Rapid geographic spread of a methicillin-resistant Staphylococcus aureus strain*. Clin Infect Dis. 1997; 25(3) : 698-705.p Abstract: In May 1993, an outbreak of methicillin-resistant Staphylococcus aureus (MRSA) was identified at our tertiary care teaching center. The epidemic MRSA strain was transmitted efficiently in the hospital environment. Subsequent investigations indicated that the strain had been introduced into western Canada by a patient who had recently been hospitalized for 3 months in the Punjab, India, and had been admitted to a hospital in rural British Columbia shortly after his arrival in Canada. Transfer of the patient to a hospital in Vancouver and subsequent transfer of a colonized patient contact to a hospital in Winnipeg, Manitoba, resulted in major outbreaks of MRSA at these two large tertiary care centers within 6 weeks of the arrival of the index case in Canada. Epidemiological typing of the S. aureus coagulase gene with use of a polymerase chain reaction method and pulsed-field gel electrophoresis documented clonality of this strain. These outbreaks again illustrate both the propensity of certain strains of S. aureus to produce epidemic disease, including rapid spread within the institutional setting, and the global nature of problems with antimicrobial resistance.

Romero-Vivas J. et al. *Mortality associated with nosocomial bacteremia due to methicillin-resistant Staphylococcus aureus.* Clin Infect Dis. 1995; 21(6) : 1417-23.p Abstract: We prospectively studied all cases of Staphylococcus aureus bacteremia that occurred during an extensive outbreak of methicillin-resistant S. aureus (MRSA) in our hospital over a 4-year period (January 1990 through September 1993). We report the results of a comparative analysis of the clinical characteristics and mortality rates among patients with nosocomial bacteremia caused by MRSA (84 cases) or methicillin-susceptible S. aureus (MSSA; 100 cases). The patients with MRSA bacteremia were older than those with MSSA bacteremia (69 years vs. 54 years, respectively; P <.01) and were more likely than those with MSSA bacteremia to have the following predisposing factors: a prolonged hospitalization (32 days vs. 14 days, respectively; P <.01); prior antimicrobial therapy (61% vs. 34%, respectively; P <.01); urinary catheterization (58% vs. 27%, respectively; P <.01); nasogastric tube placement (31% vs. 13%, respectively; P <.01); and prior surgery (45% vs. 31%, respectively; P =.05). Multivariate analysis with use of the stepwise logistic regression method showed a relationship between mortality and the following variables: methicillin resistance (odds ratio [OR], 3), meningitis (OR, 13), and inadequate treatment (OR, 11).

Rommes J.H. et al. *[Selective decontamination of the digestive tract reduces mortality in intensive care patients (see comments)].* Ned Tijdschr Geneeskd. 1999; 143(12) : 602-6.p Abstract: Selective decontamination of the digestive tract (SDD) is a strategy designed to prevent or minimize the impact of infections by potentially pathogenic micro-organisms in critically ill patients requiring long-term mechanical ventilation. SDD is a four-component protocol to control the three types of infections occurring in intensive care patients: (a) a parenteral antibiotic, cefotaxime, for a few days to prevent primary endogenous infections that generally occur 'early'; (b) the topical antimicrobial drugs colistine (polymyxin E), tobramycin and amphotericin B (together: PTA) used throughout the stay in the intensive care unit (ICU) to prevent secondary endogenous infections developing in general 'late'; (c) a high standard of hygiene to prevent exogenous infections that may occur throughout the ICU stay; (d) surveillance samples of throat and rectum to distinguish between the three types of infection, to monitor compliance and efficacy of treatment and to detect emergence of resistance at an early stage. The most recent and rigorous meta-analysis examined 33 randomized SDD trials involving 5727 patients. It shows significant reductions, in overall mortality by 20% and in the incidence of lower airway infections by 65%. It failed to detect any report on the emergence of resistance and associated superinfections and/or out-breaks in the 33 studies covering a period of more than 10 years. Using the criterion of cost-per-survivor, four recent randomised trials showed that it is cheaper to produce a survivor using SDD than with the traditional approach.

Ronveaux O. et al. *Epidemiology of nosocomial bloodstream infections in Belgium, 1992-1996.* Eur J Clin Microbiol Infect Dis. 1998; 17(10)

: 695-700.p Abstract: The main results of the bloodstream infection (BSI) component of the Belgian National Programme for the Surveillance of Hospital Infections (NSIH project) are reported. From October 1992 to September 1996, 117 hospitals (59.1% of Belgian acute-care institutions) reported 13678 nosocomial BSIs. The incidence was 7.05 BSI episodes per 10000 patient-days. The incidence of BSI increased with hospital size and over time. Bloodstream infections were secondary to an infectious body site in 40.3% of the episodes, catheter-related in 23.5%, and of unknown origin in 36.2%. The associated in-hospital mortality was 31.4% and was highest in BSIs secondary to a respiratory tract infection (49.3%). In intensive care units, the incidence of BSI was 38.5 per 10000 patient-days. Coagulase-negative staphylococci were the most prevalent microorganisms (22%), followed by Staphylococcus aureus (14.1%) and Escherichia coli (13.5%). In catheter-related BSIs, these proportions were 41.9%, 18.8%, and 2.3%, respectively. The proportion of polymicrobial episodes was 9.9%. Methicillin resistance in Staphylococcus aureus was 22.3%. With its high participation rate, the NSIH project has characterized the epidemiology of nosocomial BSIs in Belgium during the period studied.

Rosenberg J. et al. *Are clinical laboratories in California accurately reporting vancomycin-resistant enterococci?* J Clin Microbiol. 1997; 35(10) : 2526-30.p Abstract: In order to determine whether hospital-based clinical laboratories conducting active surveillance for vancomycin-resistant enterococci in three San Francisco Bay area counties (San Francisco, Alameda, and Contra Costa counties) were accurately reporting vancomycin resistance, five vancomycin-resistant enterococcal strains and one vancomycin-susceptible beta-lactamase-producing enterococcus were sent to 31 of 32 (97%) laboratories conducting surveillance. Each strain was tested by the laboratory's routine antimicrobial susceptibility testing method. An Enterococcus faecium strain with high-level resistance to vancomycin (MIC, 512 microg/ml) was correctly reported as resistant by 100% of laboratories; an E. faecium strain with moderate-level resistance (MIC, 64 microg/ml) was correctly reported as resistant by 91% of laboratories; two Enterococcus faecalis strains with low-level resistance (MICs, 32 microg/ml) were correctly reported as resistant by 97 and 56% of laboratories, respectively. An Enterococcus gallinarum strain with intrinsic low-level resistance (MIC, 8 microg/ml) was correctly reported as intermediate by 50% of laboratories. A beta-lactamase-producing E. faecalis isolate was correctly identified as susceptible to vancomycin by 100% of laboratories and as resistant to penicillin and ampicillin by 68 and 44% of laboratories, respectively; all 23 (74%) laboratories that tested for beta-lactamase recognized that it was a beta-lactamase producer. This survey indicated that for clinically significant enterococcal isolates, laboratories in the San Francisco Bay area have problems in detecting low- to moderate-level but not high-level vancomycin resistance. Increasing accuracy of detection and prompt reporting of these isolates and investigation of cases are the next steps in the battle for control of the spread of vancomycin resistance.

Rosenthal R.A. et al. *A comparative study of the microbiologic effectiveness of chemical disinfectants and peroxide-neutralizer systems.* CLAO J. 1995; 21(2) : 99-110.p Abstract: We evaluated the antimicrobial activity of chemical and hydrogen peroxide-neutralizer contact lens disinfection systems. The acute activity, storage, and recontamination potential of the two disinfection methods were compared by challenging the disinfectants with Staphylococcus spp., Pseudomonas aeruginosa, Serratia marcescens, Candida spp., and Aspergillus fumigatus. Chemical disinfectants preserved with polyquaternium-1 and polyhexamethylene biguanide and hydrogen peroxide-neutralizer systems with no additional preservatives were tested. Additionally, lens cases from patients using both systems were evaluated. Lens cases from patients using peroxide-neutralizer systems tended toward heavier contamination (31.8%) than the cases disinfected with a chemical system (20.3%, P = 0.16). The laboratory results showed that the differences in activity of chemical and peroxide-neutralizer systems was not statistically significant at the disinfection times against Staphylococcus epidermidis, S. marcescens, Candida parapsilosis, and A. fumigatus (P = 0.1037 to P = 0.5412). A statistical difference was shown against C. albicans (P = 0.0176) in favor of the peroxide-neutralizer systems. The reverse was true during storage. Although the chemical disinfectants maintained the population of microorganisms, the bacteria and yeast increased to over 10(7) CFU/mL in neutralized peroxide systems. Overall, the results emphasize the importance of contact lens products containing preservatives for lasting protection from microorganisms.

Rossi A. et al. *[Monitoring antibiotic resistance in Argentina. The WHONET program, 1995-1996].* Rev Panam Salud Publica. 1999; 6(4) : 234-41.p Abstract: The World Health Organization has implemented a surveillance program for antimicrobial resistance that is known as WHONET. In Argentina the program was developed through a network of 23 public and private hospitals that participate in national and international quality-control programs. Between January 1995 and December 1996, the antimicrobial susceptibility of 16,073 consecutive clinical isolates was determined, using the recommended standards of the National Committee for Clinical Laboratory Standards of the United States of America. More than half of the Escherichia coli urinary isolates were resistant to ampicillin and more than 30% to trimethoprim/sulfamethoxazole (SXT). When the percentage of resistant isolates from outpatients (OPs) was compared to that observed in hospitalized patients (HPs), a marked difference in antimicrobial activity was noted in the case of gentamicin (2% from OPs resistant vs. 8% from HPs resistant), norfloxacin (2% vs. 6%), and third-generation cephalosporins (7% vs. 15%). Of the Klebsiella pneumoniae isolates recovered from blood cultures, 71% and 60% showed resistance to third-generation cephalosporins and to gentamicin, respectively. The overall rate of oxacillin resistance in Staphylococcus aureus was 39%. Around half of the Enterococcus spp. isolates showed high resistance to aminoglycosides, but resistance to glycopeptides was not found. In Argentina, ampicillin and SXT were not suitable for treating diarrhea. Shigella flexneri had a higher number of isolates resistant to both of those drugs (87% and 74%, respectively) than Sh. sonnei did (47% and 71%, respectively). About 40% of the Salmonella spp. isolated in pediatric hospitals were resistant to third-generation cephalosporins. When microorganisms causing bacterial meningitis were examined, Streptococcus pneumoniae showed a resistance rate of 18% to penicillin and Haemophilus influenzae a resistance rate of 19% to ampicillin. These rates are within the intermediate range reported for other countries of the Americas and for Europe.

Rossi A. *Actividad in vitro de trovafloxacina, otras fluoroquinolonas y de diferentes antimicrobianos frente a aislamiento clinicos.* Medicina (B.Aires). 1999; 59(supl. 1) : 8-16.p Abstract: Se evaluó la actividad in vitro de trovafloxacina en comparación con la de otros antimicrobianos frente a 5671 aislamientos clínicos recuperados por instituciones representativas de diferentes provincias del país. Entre las enterobacterias, los porcentajes de resistencia a gentamicina y cefalosporinas de tecera generación fueron elevados: 17 por ciento y 16 por ciento respectivamente, con una variación considerable segÆn la especie analizada. La resistencia a ciprofloxacina (CIP) y trovafloxacina (TRV) afectó a aproximadamente el 9 por ciento de los aislamientos, no observándose diferencias significativas entre ambas drogas. Sobre 166 aislamientos de Salmonella spp., 208 de Shigella flexneri y 76 de Shigella sonnei, las quinolonas fluoradas (QF) presentaron una excelente actividad: sólo 1 aislamiento de S. sonnei fue resistente a CIP, pero sensible a TRV. Alrededor de la mitad de los aislamientos de Salmonella spp. y S.sonnei y la casi totalidad de los de S. flexneri fueron resistentes a ampicilina y más del 60 por ciento de Shigella spp. presentaron resistencia a trimetoprima-sulfametaxazol. El 41 por ciento y 55 por ciento de los aislamientos de Staphylococcus aureus y Staphylococcus coagulasa negativa fueron resistentes a oxacilina presentando una elevada multirresistencia acompañante. La resistencia a QF también estuvo fuertemente asociada a la oxacilino-resistencia, pero la resistencia a TRV fue significativamente menor que a CIP: 9 por ciento vs 57 por ciento para S. aureus y 4 por

ciento vs 41 por ciento para a Stafilococcus coagulasa negativa. Un comportamamiento similar se observó frente a Enterococcus spp., donde el 54 por ciento fue resistente a norfloxacina y sólo el 13 por ciento lo fue a TRV. No se detectaron aislamientos de Streptococcus pneumoniae (n=193) y Haemophilus influenzae (n=139) resistentes a TRV. (AU).

Rossi M. et al. *Nucleotide sequence, expression and transcriptional analysis of the Bifidobacterium longum MB 219 lacZ gene.* Arch Microbiol. 2000; 174(1-2) : 74-80.p Abstract: The gene encoding beta-galactosidase was isolated by functional complementation of Escherichia coli from Bifidobacterium longum MB219, which exhibited the highest activity among ten Bifidobacterium strains tested of the species B. longum, B. breve, B. adolescentis, B. indicum, B. animalis and B. cuniculi. The nucleotide sequence of the 5.0-kb fragment conferring the positive beta-galactosidase phenotype to E. coli revealed the presence of a lacZ-type gene encoding a 1023-amino-acid protein that was preceded by a ribosome binding site. A sequence showing 72% identity with the proline tRNA of Bacillus subtilis and a gene probably encoding the DNA-3-methyladenine glycosydase I were located downstream from the lacZ gene, after a gap of 30-50 unsequenced base pairs. By primer-extension analysis, the transcription start site of the lacZ gene was mapped 65 nt upstream from the start codon, and it enabled identification of the -10 region of the putative promoter. The nucleotide sequence of lacZ and its deduced amino acid sequence were compared with those of beta-galactosidase genes and enzymes from other microorganisms. High similarity was demonstrated between the B. longum beta-galactosidase and its counterparts in Lactobacillus delbruckii subsp. bulgaricus, Streptococcus salivarius subsp. thermophilus, E. coli, Clostridium acetobutylicum, Leuconostoc lactis, Klebsiella pneumoniae and Kluyveromyces marxianus var. lactis, all belonging to the LacZ family. The B. longum MB219 lacZ gene was cloned in Bifidobacterium and its expression was observed in strains with otherwise low levels of endogenous activity. The expression increased by factors of 1.5-50 and enabled those strains that do not grow on lactose to use this sugar as sole carbon source.

Rossoni E.M. et al. *Comparison of sodium hypochlorite and peracetic acid as sanitising agents for stainless steel food processing surfaces using epifluorescence microscopy.* Int J Food Microbiol. 2000; 61(1) : 81-5.p Abstract: The effects of the sanitising agents sodium hypochlorite and peracetic acid on Escherichia coli, Pseudomonas fluorescens and Staphylococcus aureus adhering to stainless steel were compared using epifluorescence microscopy. The bacteria were isolated from chicken carcasses and allowed to adhere to stainless steel coupons for 1 h before being rinsed with sterile distilled water and treated with the sanitising agents at 250 or 1000 mg l(-1) (peracetic acid) or 100 or 200 mg l(-1) (hypochlorite) for 10 min. P. fluorescens showed the greatest adhesive ability, followed by E. coli, while S. aureus adhered in lowest numbers. In all cases, sodium hypochlorite was more effective than peracetic acid in killing or removing the adherent cells. After treatment with either concentration of hypochlorite, the number of adhered cells per field (area 8.66 x 10(-3) mm2) was reduced from 118.5, 52.0 and 28.0 to 1.0, 0.0 and 0.0 for E. coli, Pseudomonas fluorescens and Staphylococcus aureus, respectively. These are equivalent to reductions from 13.7 x 10(3), 6.0 x 10(3) and 3.2 x 10(3) to 1.2 x 10(2) cells mm(-2) for E. coli and less than this number for the other two species. A median value of zero was not attained for any of the peracetic acid-treated coupons. This sanitising agent was the least effective against S. aureus, achieving only a little over 50% reduction in viable adhered cell numbers at 250 mg l(-1). In view of the importance of these microorganisms as food contaminants, and on economic grounds, peracetic acid cannot be recommended as the sanitising agent of choice for chicken processing equipment.

Roth D.B. et al. *Antibiotic selection in the treatment of endophthalmitis: the significance of drug combinations and synergy.* Surv Ophthalmol. 1997; 41(5) : 395-401.p Abstract: Emerging resistance of organisms to standard antibiotic therapy has forced clinicians to continually evaluate the best intraocular antibiotics for the treatment of endophthalmitis. Early diagnosis and appropriate treatment with intraocular antibiotics are important factors in the successful management of endophthalmitis. Although drug combinations are necessary to cover the full range of bacteria causing endophthalmitis, antimicrobial synergy is probably less important in endophthalmitis treatment because of the high intravitreal concentration of individual antibiotics achieved by intravitreal injection. In the treatment of bacterial endophthalmitis, the combination of intravitreal vancomycin (1 mg/0.1 cc) and ceftazidime (2.25 mg/ 0.1 cc) is a reasonable alternative to the combination vancomycin and amikacin (0.4 mg/ 0.1 cc).

Roth V.R. et al. *Outbreaks of infection and/or pyrogenic reactions in dialysis patients.* Semin Dial. 2000; 13(2) : 92-6.p Abstract: These dialysis-related outbreaks demonstrate the ongoing potential for infection-related morbidity and mortality among dialysis patients. Many of these outbreaks could have been prevented by adequate water treatment, proper disinfection of water systems and dialysis machines, adherence to recommended reprocessing protocols in centers reusing dialyzers, and more stringent quality control monitoring. Finally, these outbreaks highlight the importance of active surveillance for adverse events among dialysis patients. The incidence of gram-negative bacteremia, pyrogenic reactions, and peritonitis should be monitored over time and any increase in incidence investigated.

Rotschafer J.C. et al. *Combination beta-lactam and beta-lactamase-inhibitor products: antimicrobial activity and efficiency of enzyme inhibition.* Am J Health Syst Pharm. 1995; 52(6 Suppl 2) : S15-22.p Abstract: Classification schemes for gram-negative beta-lactamases are presented, mechanisms by which beta-lactamases inactivate beta-lactam antibiotics are reviewed, and methods for assessing the efficiency of beta-lactamase inhibitors are evaluated. Beta-lactamases are commonly produced by Staphylococcus species, the Enterobacteriaceae, Pseudomonas aeruginosa, Acinetobacter species, and some anaerobes. Currently available beta-lactamase inhibitors are thought to be "suicide inhibitors" that form stable complexes between the bacterial beta-lactamase and the beta-lactamase inhibitor in a multistep chemical reaction. Each step can be quantitated; however, the overall process is difficult to measure. Thus, a comparative evaluation of commercially available beta-lactamase inhibitors is extremely difficult and must be done under standardized test conditions. In general, sulbactam, clavulanate, and tazobactam are all potent inhibitors of staphylococcal penicillinase; chromosomal beta-lactamases produced by Bacteroides species, Proteus vulgaris, Haemophilus influenzae, Neisseria gonorrhoeae; and type IV enzymes of Klebsiella species. Although sulbactam possesses activity against TEM-1 and TEM-2 beta-lactamases, it does not have reliable activity against SHV-1 beta-lactamases. Clavulanate and tazobactam are potent inhibitors of both TEM and SHV-1 beta-lactamases. P. aeruginosa and some Enterobacteriaceae produce an inducible, extremely potent, broad-spectrum enzyme (type I beta-lactamase). Tazobactam is the only currently available. beta-lactamase inhibitor with activity against type I beta-lactamases; however, some enzymes are not inhibited by tazobactam.

Rowan N.J. et al. *Pulsed-light inactivation of food-related microorganisms.* Appl Environ Microbiol. 1999; 65(3) : 1312-5.p Abstract: The effects of high-intensity pulsed-light emissions of high or low UV content on the survival of predetermined populations of Listeria monocytogenes, Escherichia coli, Salmonella enteritidis, Pseudomonas aeruginosa, Bacillus cereus, and Staphylococcus aureus were investigated. Bacterial cultures were seeded separately on the surface of tryptone soya-yeast extract agar and were reduced by up to 2 or 6 log10 orders with 200 light pulses (pulse duration, approximately 100 ns) of low or high UV content, respectively ($P < 0.001$).

Rowe A.K. et al. *Antimicrobial resistance of nasopharyngeal isolates of Streptococcus pneumoniae and Haemophilus influenzae from children in the Central African Republic.* Pediatr Infect Dis J. 2000; 19(5) : 438-44.p Abstract: BACKGROUND: To assist the Central African Republic (CAR) develop national guidelines for treating children with pneumonia, a survey was conducted to determine antimicrobial resistance rates of nasopharyngeal isolates of Streptococcus pneumoniae (SP) and Haemophilus influenzae (HI). Secondary purposes of the survey were to identify risk factors associated with carriage of a resistant isolate and to compare the survey methods of including only children with pneumonia vs. including all ill children. METHODS: A cross-sectional survey of 371 ill children was conducted at 2 outpatient clinics in Bangui, CAR. RESULTS: In all 272 SP isolates and 73 HI isolates were cultured. SP resistance rates to penicillin, trimethoprim-sulfamethoxazole (TMP-SMX), tetracycline and chloramphenicol were 8.8, 6.3, 42.3 and 9.2%, respectively. All penicillin-resistant SP isolates were intermediately resistant. HI resistance rates to ampicillin, TMP-SMX and chloramphenicol were 1.4, 12.3 and 0%, respectively. The most common SP serotypes/groups were 19, 14, 6 and 1; 49% of HI isolates were type b. History of antimicrobial use in the previous 7 days was the only factor associated with carriage of a resistant isolate. Resistance rates were similar among ill children regardless of whether they had pneumonia. CONCLUSIONS: Resistance rates were low for antimicrobials recommended by the World Health Organization for children with pneumonia. We recommended TMP-SMX as the first line treatment for pneumonia in CAR because of its low cost, ease of dosing and activity against malaria.

Rubinstein E. *Antimicrobial resistance—pharmacological solutions.* Infection. 1999; 27 Suppl 2 : S32-4.p Abstract: The interaction between microbial resistance and antibacterial agents occurs in a direct and an indirect fashion. Directly—through the development of resistance to the agent used, or to agents of the same class—as exemplified by the induction of beta-lactamase by both gram-positive and gram-negative bacteria. It also takes place through the development of resistance to compounds of different classes to the compound used, as exemplified by the loss of Streptococcus pneumoniae susceptibility to penicillin that is accompanied by a parallel loss of sensitivity to erythromycin and to tetracycline. As for the indirect way—microbial resistance may develop through selection of resistant organisms when the patient is treated with antibiotics, when the environment is contaminated with antibiotics (hospital) or when antibacterial agents are used in agriculture and animal husbandry.

Rubinstein E. et al. *Activity of quinupristin/dalfopristin against gram-positive bacteria: clinical applications and therapeutic potential.* J Antimicrob Chemother. 1997; 39 Suppl A : 139-43.p Abstract: In recent years there has been a dramatic worldwide increase in the prevalence of multiple drug-resistant strains of common Gram-positive bacteria. This highlights the need for a new class of antibiotic with activity against these organisms. Quinupristin/dalfopristin, the first injectable streptogramin antibiotic, has a unique spectrum of activity, encompassing most Gram-positive cocci (including multi-drug-resistant strains), respiratory pathogens and anaerobes, Gram-positive, and a prolonged post-antibiotic effect. Quinupristin/ dalfopristin is active in vitro against multi-drug-resistant isolates of Staphylococcus aureus, coagulase-negative staphylococci, penicillin-resistant pneumococci and vancomycin-resistant Enterococcus faecium. Clinical case reports have shown that the combination is active against intra-abdominal, aortic graft, bacteraemia and hydrocephalus shunt infections caused by multi-drug-resistant enterococci, particularly E. faecium. In almost all of these clinical situations the enterococcal infection had displayed resistance to all other antimicrobial therapies. Preliminary clinical data have demonstrated the activity of quinupristin/ dalfopristin against S. aureus bacteraemia, and quinupristin/dalfopristin may also prove useful in the treatment of pneumococcal infections. Thus, possible future applications of the combination include the treatment of multi-drug-resistant strains of staphylococci, streptococci and enterococci. Quinupristin/dalfopristin may prove useful in the treatment of staphylococcal infections in children, invasive systemic pneumococcal infections, and nosocomial and community-acquired Gram-positive infections in patients unable to tolerate beta-lactam antimicrobial agents or glycopeptide antibiotics.

Rudolph K.M. et al. *Characterization of a multidrug-resistant clone of invasive Streptococcus pneumoniae serotype 6B in Alaska by using pulsed-field gel electrophoresis and PspA serotyping.* J Infect Dis. 1999; 180(5) : 1577-83.p Abstract: Antimicrobial susceptibility, pneumococcal surface protein A (PspA) serotyping, and pulsed-field gel electrophoresis (PFGE) were used to evaluate clonal relatedness among 66 invasive isolates of Streptococcus pneumoniae serotype 6B collected during 1982-1996 from patients in Alaska. Thirty-seven (56%) of the isolates had penicillin minimal inhibitory concentration values >/=0.125 microgram/mL and were resistant to at least 1 other antibiotic. Fourteen PspA serotypes were observed; PspA 16 was the most common (35%). Forty-five (68%) of the 66 isolates shared common and highly related PFGE patterns using 3 enzymes. Twenty-six (58%) of the isolates with common PFGE patterns were from Native Alaskan children </=2 years of age residing in 1 region of Alaska. Alaskan serotype 6B had distinct PFGE patterns, compared with the South African 6B-8 and Spanish 6B-2 multidrug-resistant clones, suggesting that the Alaskan 6B isolates were distinct from these other pneumococcal 6B clones but were genetically related to each other [corrected].

Rudolph K.M. et al. *Serotype distribution and antimicrobial resistance patterns of invasive isolates of Streptococcus pneumoniae: Alaska, 1991-1998.* J Infect Dis. 2000; 182(2) : 490-6.p Abstract: From January 1991 through December 1998, a total of 1046 pneumococcal isolates were received from 23 laboratories participating in the statewide surveillance system. Of these, 1037 were recovered from normally sterile sites (blood and cerebrospinal and pleural fluid) and were available for serotyping and susceptibility testing. Ninety-two percent of these isolates were serotypes represented in the 23-valent pneumococcal polysaccharide vaccine. Serotypes in the 7-valent pneumococcal conjugate vaccine (4, 6B, 9V, 14, 18C, 19F, and 23F) were recovered from 72% of Alaska Natives and 84% of non-Native children <5 years old with invasive disease. Statewide, 7.3% and 3.2% of isolates had intermediate and high levels of resistance to penicillin, respectively; 9.2% were resistant to erythromycin (minimal inhibitory concentration, >/=1 microg/mL) and 19% to trimethoprim/sulfamethoxazole (minimal inhibitory concentration, >/=4/76 microg/mL). Twelve percent of invasive isolates were resistant to >/=2 classes of antibiotics; of these, serotype 6B accounted for 33%, and 63% were recovered from children <5 years old.

Ruijssenaars H.J. et al. *Biodegradability of food-associated extracellular polysaccharides.* Curr Microbiol. 2000; 40(3) : 194-9.p Abstract: Exopolysaccharides (EPSs) produced by lactic acid bacteria, which are common in fermented foods, are claimed to have various beneficial physiological effects on humans. Although the biodegradability of EPSs is important in relation to the bioactive properties, knowledge on this topic is limited. Therefore, the biodegradability of eight EPSs, six of which were produced by lactic acid bacteria, was compared with microorganisms from human feces or soil. EPS-degradation was determined from the decrease in polysaccharide-sugar concentration and by high-performance size exclusion chromatography (HPSEC). Xanthan, clavan, and the EPSs produced by Streptococcus thermophilus SFi 39 and SFi 12 were readily degraded, in contrast to the EPSs produced by Lactococcus lactis ssp. cremoris B40, Lactobacillus sakei 0-1, S. thermophilus SFi20, and Lactobacillus helveticus Lh59. Clearly, the susceptibility of exopolysaccharides to biological breakdown can differ greatly, implying that the physiological effects of these compounds may also vary a lot.

Ruiz J. et al. *Increased resistance to quinolones in Campylobacter jejuni: a genetic analysis of gyrA gene mutations in quinolone-resistant clinical isolates.*

Microbiol Immunol. 1998; 42(3) : 223-6.p Abstract: Campylobacter jejuni is a frequent cause of enteritis and sometimes it requires antimicrobial therapy. We have studied the evolution of resistance to nine antibiotics from 1990 to 1994 and investigated how frequently gyrA mutations are involved in the acquisition of quinolone resistance. The percentage of chloramphenicol-, clindamycin-, tetracycline- and amoxicillin plus clavulanic acid-resistant strains has remained practically unchanged and erythromycin and gentamicin resistance has decreased, whereas the percentage of ampicillin-, nalidixic acid- or ciprofloxacin-resistant strains has almost doubled in the follow-up period, from 56 to 76% for ampicillin- and from 47.5 to 88% for quinolone-resistant strains. This study clearly shows that a mutation in Thr-86 to Ile or Lys is a frequent mechanism associated with the acquisition of a high level of resistance to quinolones in clinical isolates of C. jejuni.

Ruiz J. et al. *Evolution of resistance among clinical isolates of Acinetobacter over a 6-year period.* Eur J Clin Microbiol Infect Dis. 1999; 18(4) : 292-5.p Abstract: The aim of this report was to study the evolution of susceptibilities of 1532 clinical isolates of Acinetobacter recovered over a period of 6 years. The minimal inhibitory concentrations (MICs) of 15 antimicrobial agents were determined for all the isolates. The respective percentages of resistant strains in the years 1991 and 1996 were as follows: ciprofloxacin, 54.4% and 90.4%; tobramycin, 33% and 71.8%; amikacin, 21% and 83.7%; ampicillin plus sulbactam, 65.7% and 84.1%; ceftazidime, 57.4% and 86.8%; ticarcillin, 70% and 89.4%; trimethoprim plus sulfamethoxazole, 41.1% and 88.9%; and imipenem, 1.3% and 80%. The MIC90s of ciprofloxacin, sparfloxacin, biapenem, meropenem, imipenem, cefepime, cefpirome, and rifampicin against 250 imipenem-resistant Acinetobacter strains were >32, >32, 128, >256, 256, >256, 256, and 16 mg/l, respectively. With serious infections, it was necessary to resort to the use of colistin, the only antibiotic active in vitro.

Rusen I.D. et al. *Nasopharyngeal pneumococcal colonization among Kenyan children: antibiotic resistance, strain types and associations with human immunodeficiency virus type 1 infection.* Pediatr Infect Dis J. 1997; 16(7) : 656-62.p Abstract: OBJECTIVES: To compare pneumococcal nasopharyngeal colonization rates among HIV-1-infected children with those of uninfected children born to seropositive mothers and those of seronegative controls. To determine the predominant serotypes and antimicrobial susceptibility among pneumococcal isolates in Kenya. METHODS: Nasopharyngeal pneumococcal colonization was examined in 207 children recruited from the Perinatal HIV-1 Transmission Study conducted in Nairobi, Kenya. Colonization was compared among HIV-1-infected children, uninfected children born to seropositive mothers and control seronegative children. Isolates were serotyped and tested for antibiotic susceptibility to penicillin, tetracycline, erythromycin, chloramphenicol, clindamycin and rifampin. RESULTS: Colonization was higher among HIV-1-infected and uninfected children than among controls only when associated with respiratory illnesses (86% of 7 and 60% of 20 vs. 29% of 31, P = 0.004). No differences were observed when children were asymptomatic (20% of 35, 35% of 94 and 22% of 101). Intermediate penicillin resistance was found in 60% of 94 isolates, 28% were resistant to tetracycline and all isolates were susceptible to the other antibiotics tested. Sixteen serotypes were identified, with 13, 15, 14, 6B and 19F comprising 73% of isolates. Serotype 13 was found in 31% of colonized children. This serotype and 2 others isolated are not found in the current 23-valent polysaccharide vaccine. Overall 41% of colonized children harbored nonvaccine strains. CONCLUSIONS: Although nasopharyngeal pneumococcal colonization was high among children with respiratory illness born to HIV-1-seropositive mothers, increased asymptomatic colonization did not explain the increased risk of invasive pneumococcal disease associated with HIV-1 infection. Intermediate penicillin resistance was common but high level penicillin and multiple antibiotic resistance were not seen. The prevalence of the unique strains circulating in this region will need to be considered in the design of effective pneumococcal vaccines for use in East Africa.

Rushdy A. et al. *PHLS overview of communicable diseases 1997: results of a priority setting exercise.* Commun Dis Rep CDR Wkly. 1998; 8 Suppl 5 : S1-12.p Abstract: In early 1997, the PHLS Overview of Communicable Diseases (OVCD) Committee carried out a consultation exercise to inform the development of PHLS priorities in communicable diseases for the years 1997 to 1999. The views of PHLS senior staff and scientific committees and consultants in communicable disease control in district health authorities were sought by postal questionnaire, and several organisations of health professionals were asked for their views on the initial findings. The main findings of the exercise are summarised in three areas of priority. Priority 1 diseases-those of major importance to public health-included food poisoning, meningitis, tuberculosis, sexually transmitted diseases, vaccine preventable diseases, hospital acquired infections, and antimicrobial resistance. Priority 2 diseases-those of moderate importance to public health-included respiratory syncytial virus and varicella zoster virus infections and emerging problems such as travel associated infections. Priority 3 diseases included those whose prevalence is declining as a result of public health action, such as listeriosis, and diseases of low prevalence and/or associated morbidity. The exercise identified four areas of possible future work for the PHLS: activities in prion diseases, helping to tackle inequalities in health, taking a more active approach to documenting the socioeconomic burden of diseases, and engaging more with those consulted. The PHLS has used the results of the priority setting exercise to guide major programme initiatives in tuberculosis, measles, mumps, and rubella, meningococcal and pneumococcal diseases, and in antibiotic resistance. In addition, they have helped to shape agenda in service delivery and research in hospital acquired infections, sexually transmitted diseases, and gastrointestinal diseases. This exercise of engaging corporately with key professionals in communicable disease has paved the way for a wider engagement with stakeholders in the setting of future priorities.

Rusin P.A. et al. *Risk assessment of opportunistic bacterial pathogens in drinking water.* Rev Environ Contam Toxicol. 1997; 152 : 57-83.p Abstract: This study was undertaken to examine quantitatively the risks to human health posed by heterotrophic plate count (HPC) bacteria found naturally in ambient and potable waters. There is no clear-cut evidence that the HPC bacteria as a whole pose a public health risk. Only certain members are opportunistic pathogens. Using the four-tiered approach for risk assessment from the National Academy of Sciences, hazard identification, dose-response modeling, and exposure through ingestion of drinking water were evaluated to develop a risk characterization, which estimates the probability of infection for individuals consuming various levels of specific HPC bacteria. HPC bacteria in drinking water often include isolates from the following genera: Pseudomonas, Acinetobacter, Moraxella, Aeromonas, and Xanthomonas. Other bacteria that are commonly found are Legionella and Mycobacterium. All these genera contain species that are opportunistic pathogens which may cause serious diseases. For example, the three nonfermentative gram-negative rods most frequently isolated in the clinical laboratory are (1) Pseudomonas aeruginosa, (2) Acinetobacter, and (3) Xanthomonas maltophilia. P. aeruginosa is a major cause of hospital-acquired infections with a high mortality rate. Aeromonas is sometimes associated with wound infections and suspected to be a causative agent of diarrhea. Legionella pneumophila causes 4%-20% of cases of community-acquired pneumonia and has been ranked as the second or third most frequent cause of pneumonia requiring hospitalization. The number of cases of pulmonary disease associated with Mycobacterium avian is rapidly increasing and is approaching the incidence of M. tuberculosis in some areas. Moraxella can cause infections of the eye and upper respiratory tract. The oral infectious doses are as follows in animal and human test subjects: P. aeruginosa, 10(8)-10(9); A, hydrophila, > 10(10); M. avium, 10(4)-10(7); and X.

maltophilia, 10(6)-10(9). The infectious dose for an opportunistic pathogen is lower for immunocompromised subjects or those on antibiotic treatment. These bacteria have been found in drinking water at the following frequencies: P. aeruginosa, < 1%-24%; Acinetobacter, 5%-38%; X. maltophilia, < 1%-2%; Aeromonas, 1%-27%; Moraxella, 10%-80%; M. avium, < 1%-50%; and L. pneumophila, 3%-33%. These data suggest that drinking water could be a source of infection for some of these bacteria. The risk characterization showed that risks of infection from oral ingestion ranged from a low of 7.3 x 10(-9) (7.3/billion) for low exposures to Aeromonas to higher risks predicted at high levels of exposure to Pseudomonas of 9 x 10(-2) (98/100). This higher risk was only predicted for individuals on antibiotics. Overall, the evidence suggests that specific members of HPC bacteria found in drinking water may be causative agents of both hospital- and community-acquired infections. However, the case numbers may be very low and the risks represent levels generally less than 1/10,000 for a single exposure to the bacterial agent. Future research needs include (1) determining the seasonal concentrations of these bacteria in drinking water, (2) conducting adequate dose-response studies in animal subjects or human volunteers, (3) determining the health risks for an individual with multiple exposures to the opportunistic pathogens, and (4) evaluating the increase in host susceptibility conferred by antibiotic use or immunosuppression.

Russell M.W. et al. *Secretory immunity in defense against cariogenic mutans streptococci*. Caries Res. 1999; 33(1) : 4-15.p Abstract: Specific immune defense against cariogenic mutans streptococci is provided largely by salivary secretory IgA antibodies, which are generated by the common mucosal immune system. This system is functional in newborn infants, who develop salivary IgA antibodies as they become colonized by oral microorganisms. The mechanisms of action of salivary IgA antibodies include interference with sucrose-independent and sucrose- dependent attachment of mutans streptococci to tooth surfaces, as well as possible inhibition of metabolic activities. The goal of protecting infants against colonization by mutans streptococci might be accomplished by applying new strategies of mucosal immunization that would induce salivary IgA antibodies without the complications of parenteral immunization. Strategies of mucosal immunization against mutans streptococci currently under development include the use of surface adhesins and glucosyltransferase as key antigens, which are being incorporated into novel mucosal vaccine delivery systems and adjuvants. The oral application of preformed, genetically engineered antibodies to mutans streptococcal antigens also offers new prospects for passive immunization against dental caries.

Russo P. *Urologic emergencies in the cancer patient*. Semin Oncol. 2000; 27(3) : 284-98.p Abstract: Urologic emergencies are common in the cancer patient and relate mainly to complications of bladder hemorrhage, upper or lower urinary tract obstruction, urinary tract infection, and priapism. Hemorrhagic cystitis is commonly due to bladder injury from radiation therapy, viral infection, or metabolites of chemotherapeutic agents. Treatments aimed at ameliorating the effects of theses metabolites, such as mesna and intravenous (IV) hydration, coupled with cystoscopy, evacuation of clots, and formalin instillation, have given clinicians an effective means of avoiding exsanguinating hemorrhage from the bladder. Malignant ureteral obstruction is an ominous sign in the cancer patient and may be due to tumor compression, retroperitoneal adenopathy, or direct tumor invasion. The endourologic procedures of ureteral stenting and percutaneous nephrostomy are effective means of palliation; however, complications of infection, stent obstruction, and stent migration can result in hospital admission and a decline in quality of life. Median survival for patients with malignant ureteral obstruction is less than 7 months, regardless of the tumor of origin. Bladder outlet obstruction leading to urinary retention can be due to mechanical factors involving the bladder neck or prostate, or to a breakdown in the neurophysiologic function of the bladder. Every attempt is made to avoid surgical intervention or the placement of chronic in-dwelling catheter in these often debilitated patients. Patients are often effectively treated with a variety of pharmacologic agents, such as alpha-adrenergic receptor blockers or by the initiation of chronic intermittent catheterization. Urinary tract infections are particularly dangerous in neutropenic and bone marrow transplant patients, with bladder catheters the most common portal entry. The colonization and later infection by resistant nosocomial organisms, such as Pseudomonas aeruginosa and Candida albicans, can rapidly lead to life-threatening sepsis. On rare occasions, emergency surgical intervention with adequate open drainage or nephrectomy is required to control such infections. Priapism can be caused by hematologic malignancy with hypercoagulation, metastatic disease involving the corpora cavernosa with thrombosis of the venous outflow from the penis, or rarely from intracavernous injections used for the treatment of impotence. If effective treatment exists for the primary tumor, improvement or resolution of the state of priapism may occur. Radiation therapy may be required to decrease the pain associated with malignant priapism, but surgical shunting procedures are rarely effective.

Rusthoven J. et al. *Use of granulocyte colony-stimulating factor (G-CSF) in patients receiving myelosuppressive chemotherapy for the treatment of cancer. Provincial Systemic Treatment Disease Site Group.* Cancer Prev Control. 1998; 2(4) : 179-90.p Abstract: GUIDELINE QUESTIONS: 1) Does G-CSF reduce the incidence of important adverse clinical outcomes due to infections in patients with cancer treated with myelosuppressive therapy? 2) Does G-CSF allow maintenance of the chemotherapy dose with the goal of improving survival? OBJECTIVE: To evaluate the evidence for the role of G-CSF in patients receiving myelosuppressive chemotherapy for the treatment of cancer. OUTCOMES: Clinical outcomes reflecting events that may affect quality of life and/or resource utilization (e.g., rates and duration of hospitalization, antibiotic use); outcomes reflecting the effect of treatment on infection rates, tumour response and survival and those related to the biological effect of G-CSF. PERSPECTIVE (VALUES): Evidence was selected, reviewed and synthesized by members of the Provincial Systemic Treatment Disease Site Group (DSG) of the Cancer Care Ontario Practice Guidelines Initiative. Drafts of this document have been circulated and reviewed by members of the Systemic Treatment DSG. The DSG comprises medical oncologists, pharmacists, supportive care personnel and administrators. Evaluation by clinicians was considered in the final practice guideline. Community representatives did not participate in the development of this report but will in future reports. Guidelines approval does require participation by community representatives. QUALITY OF EVIDENCE: Two published guidelines and an update of one guideline were identified. Ten eligible randomized controlled trials published in English were included. BENEFITS: A meta-analysis of data from 8 trials showed that the odds of experiencing febrile neutropenia with G-CSF were significantly reduced (odds ratio 0.38; 95% confidence interval [CI] 0.27 to 0.52; p < 0.00001). G-CSF reduced the risk of febrile neutropenia by 34% (risk ratio 0.66; 95% CI 0.51 to 0.86; p = 0.0015). The use of G-CSF was associated with a significant reduction in antibiotic usage and days spent in hospital in 2 trials and had no effect in the other 4 in which it was measured. Five trials reported no difference in overall median survival, with 2 small trials detecting a significant increase related to G-CSF. However, further research is necessary to confirm these results. HARMS: The toxic effects of G-CSF are relatively mild. The most consistent clinical symptom attributed to G-CSF is bone pain, reported in incidence rates ranging from 20% to 50% in 3 trials. Except for one case, reported bone pain was mild. PRACTICE GUIDELINE: In cancer patients receiving myelosuppressive chemotherapy, granulocyte colony-stimulating factor (G-CSF) may be beneficial for some patients. If a reduction in the number of febrile neutropenic episodes, or in the duration of such episodes, is expected to improve quality of life, then G-CSF is a reasonable treatment option for selected patients. A clear justification for the use

of G-CSF should be stated. If the objective of using G-CSF is to maintain dose intensity of antitumour agents, then G-CSF can be recommended where reduction in dose intensity has been shown in randomized controlled trials to reduce survival or disease-free survival. Although the evidence is weaker, the Systemic Treatment DSG would support the practice endorsed by other guidelines (American Society of Clinical Oncology, Ontario Drug Benefit Plan) and would recommend G-CSF for patients receiving potentially curative chemotherapy: i) as primary prophylaxis; that is, where dose reductions below a specified level are required because of a known high risk of febrile neutropenia, or ii) as secondary prophylaxis in patients receiving chemotherapy of established efficacy who have suffered a prior serious episode of febrile neutropenia due to the same chemotherapy regimen. The exact cut-off for dose reductions is unknown at this time and ought to be left to the judgement of the clinician. In general, the use of G-CSF for dose reductions lower than 20% is not recommended. (ABSTRACT TRUNCATED).

Rutala W.A. et al. *Antimicrobial activity of home disinfectants and natural products against potential human pathogens.* Infect Control Hosp Epidemiol. 2000; 21(1) : 33-8.p Abstract: OBJECTIVE: To assess the efficacy of both natural products (vinegar, baking soda) and common commercial disinfectants (Vesphene IIse, TBQ, Clorox, Lysol Disinfectant Spray, Lysol Antibacterial Kitchen Cleaner, Mr. Clean Ultra, ethanol) designed for home or institutional use against potential human pathogens, including selected antibiotic-resistant bacteria. DESIGN: A quantitative suspension test was used to assess the efficacy of selected disinfectants following exposure times of 30 seconds and 5 minutes. Activity was assessed against Staphylococcus aureus, Salmonella choleraesuis, Escherichia coli O157:H7, and Pseudomonas aeruginosa. Selected disinfectants were also tested against poliovirus, vancomycin-susceptible and -resistant Enterococcus species, and methicillin-susceptible and -resistant S. aureus. RESULTS: The following compounds demonstrated excellent antimicrobial activity (>5.6-8.2 log10 reduction) at both exposure times: TBQ, Vesphene, Clorox, ethanol, and Lysol Antibacterial Kitchen Cleaner. Mr. Clean eliminated 4 to >6 logs10 and Lysol Disinfectant approximately 4 logs10 of pathogenic microorganisms at both exposure times. Vinegar eliminated <3 logs10 of S. aureus and E. coli, and baking soda <3 logs10 of all test pathogens. All tested chemical disinfectants completely inactivated both antibiotic-resistant and -susceptible bacteria at both exposure times. Only two disinfectants, Clorox and Lysol, demonstrated excellent activity (>3 log10 reduction) against poliovirus. CONCLUSIONS: A variety of commercial household disinfectants were highly effective against potential bacterial pathogens. The natural products were less effective than commercial household disinfectants. Only Clorox and Lysol disinfectant were effective against poliovirus.

Rutala W.A. et al. *Levels of microbial contamination on surgical instruments.* Am J Infect Control. 1998; 26(2) : 143-5.p Abstract: OBJECTIVE: To ascertain the microbial load and type of organisms on used surgical instruments following standard cleaning, which consisted of the use of a washer sterilizer followed by sonic cleaning. DESIGN: In this prospective experimental study, used surgical instruments were immersed in Peptamin Tween broth, the broth agitated, and then filtered through a 0.45 microm filter. Quantitative cultures were performed, and all microbes were identified by using standard techniques. SETTING: This study was conducted at a 660-bed university hospital. RESULTS: The microbial load remaining on used surgical instruments after cleaning was as follows: 36 (72%) instruments 0 to 10 colony-forming units (CFU), 7 (14%) instruments 11 to 100 CFU, and 7 (14%) instruments > 100 CFU. Organisms contaminating the instruments included coagulase-negative staphylococcus (56%) followed by Bacillus (22%) and diphtheroids (14%). No other microbes were isolated from more than 4% of the instruments. CONCLUSION: Most used nonlumen surgical instruments contain less than 100 CFU of relatively nonpathogenic microorganisms after cleaning. This suggests that new low-temperature sterilization technologies are likely to be highly effective in preventing cross-transmission of infection via nonlumen medical instruments.

Ryan C. et al. *Rapid assay for mycobacterial growth and antibiotic susceptibility using gel microdrop encapsulation.* J Clin Microbiol. 1995; 33(7) : 1720-6.p Abstract: Effective control of tuberculosis transmission in vulnerable population groups is dependent on rapid identification of the infectious agent and its drug susceptibility. However, the slow growth rate of mycobacteria has undermined the ability to quickly identify antimicrobial resistance. These studies describe a mycobacterial growth assay based on microencapsulation technology used in conjunction with flow cytometric analysis. Mycobacteria were encapsulated in agarose gel microdrops approximately 25 microns in diameter, and colony growth was monitored by using flow cytometry to evaluate the intensity of auramine staining after culture for various times at 37 degrees C. By this method, colony growth of Mycobacterium bovis and M. smegmatis could be quantified within 1 to 3 days after encapsulation. Inhibition of growth by rifampin and isoniazid was also evaluated in this time period, and the presence of an isoniazid-resistant subpopulation representing 3% of the total microorganisms could be detected. This use of encapsulation and flow cytometry has the potential to facilitate rapid and automated evaluation of inhibition of growth by antimicrobial agents and shorten the time frame for analysis of clinical specimens.

Rymer S. et al. *Comparação entre a eficácia antimicrobiana de três diferentes meios de preservação da córnea.* Arq. bras. oftalmol. 1996; 59(5) : 438-42.p Abstract: A endoftalmite bacteriana pode ser considerada como uma complicação frequente da ceratoplastia penetrante, se comparada com a incidência da mesma encontrada nas cirurgias de catarata, 0,8 e 0,09 por cento, respectivamente. A segurança do transplante de córnea pode ser aumentada adicionando outros agentes bactericidas a gentamicina, capazes de atingir o espectro não alcançado pela mesma. Para comparar a eficácia antimicrobiana, foram empregados 52 anéis córneo-esclerais provenientes de córneas humanas, distribuidos em 3 diferentes meios de preservação de córnea, o primeiro contendo gentamicina (optsol), o segundo gentamicina e estreptomicina (optsol GS) e o terceiro gentamicina, estreptomicina e penicilina G (likorol). As culturas dos anéis córneo-esclerais apresentaram-se positivas em 6 amostras (11,5 por cento), sem diferença estatisticamente significativa entre os diferentes grupos (p>0,05). Foram identificados os seguintes microrganismos: Candida albicans (no Optsol GS e Likorol), Staphylococcus epidermidis (no Optsol) e Streptococcus faecali (no Likorol).

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Sa-Leao R. et al. *Detection of an archaic clone of Staphylococcus aureus with low-level resistance to methicillin in a pediatric hospital in Portugal and in international samples: relics of a formerly widely disseminated strain?* J Clin Microbiol. 1999; 37(6) : 1913-20.p Abstract: Close to half of the 878 methicillin-resistant Staphylococcus aureus (MRSA) strains recovered between 1992 and 1997 from the pediatric hospital in Lisbon were bacteria in which antibiotic resistance was limited to beta-lactam antibiotics. The other half were multidrug resistant. The coexistence of MRSA with such unequal antibiotic resistance profiles prompted us to use molecular typing techniques for the characterization of the MRSA strains. Fifty-three strains chosen randomly were typed by a combination of genotypic methods. Over 90% of the MRSA strains belonged to two clones: the most frequent one, designated the "pediatric clone," was reminiscent of historically "early" MRSA: most isolates of this clone were only resistant to beta-lactam antimicrobials and remained susceptible to macrolides, quinolones, clindamycin, spectinomycin, and tetracycline. They showed heterogeneous and low-level resistance to methicillin (MIC, 1.5 to 6 microg/ml), carried the ClaI-mecA polymorph II, were free of the transposon Tn554, and showed macrorestriction pattern D

(clonal type II::NH::D). The second major clone was the internationally spread and multiresistant "Iberian" MRSA with homogeneous and high-level resistance to methicillin (MIC, >200 microg/ml) and clonal type I::E::A. Surprisingly, the multidrug-resistant and highly epidemic Iberian MRSA did not replace the much less resistant pediatric clone during the 6 years of surveillance. The pediatric clone was also identified among contemporary MRSA isolates from Poland, Argentina, The United States, and Colombia, and the overwhelming majority of these were also associated with pediatric settings. We propose that the pediatric MRSA strain represents a formerly widely spread archaic clone which survived in some epidemiological settings with relatively limited antimicrobial pressure.

Sabatino G. et al. *Neonatal suppurative parotitis: a study of five cases.* Eur J Pediatr. 1999; 158(4) : 312-4.p Abstract: Suppurative parotitis is uncommon in newborns. During a 9-year study period, five cases of neonatal suppurative parotitis were detected in 3,624 hospital admissions. The relative risk of developing neonatal suppurative parotitis in admitted infants was 5.52 (0.62-49.35). Staphylococcus aureus was the causative organism most commonly detected in the hospital-acquired cases. Antimicrobial therapy was effective in all cases; surgery was not required. CONCLUSION: Although neonatal suppurative parotitis is now uncommon in the newborn, it cannot be considered a "vanishing disease".

Sabroza P.C. et al. *Doenças transmissíveis: ainda um desafio.* ***In:*** **Minayo, M. et al.** *Os muitos Brasis: saúde e população na década de 80* Saúde em debate. São Paulo. HUCITEC. 1995; (79) : 177-244.p Abstract: As doenças transmissíveis como expressão de novos processos e problemas de saúde, decorrentes da modernidade perversa estabelecida pelo modelo de desenvolvimento capitalista dependente em sua fase pós-industrial. (JSL).

Sack R.B. et al. *Antimicrobial resistance in organisms causing diarrheal disease.* Clin Infect Dis. 1997; 24 Suppl 1 : S102-5.p Abstract: Antimicrobial resistance is becoming increasingly important in the treatment of enteric infections, particularly those due to Shigella, Vibrio cholerae, enterotoxigenic Escherichia coli (associated with traveler's diarrhea), and Salmonella typhi. The rate of antimicrobial resistance is highest in the developing world, where the use of antimicrobial drugs is relatively unrestricted. Of greatest immediate concern is the need for an effective, inexpensive antimicrobial that can be used safely as treatment for small children with dysentery due to Shigella, primarily Shigella dysenteriae type 1.

Sacks L.V. et al. *Factors related to in-hospital deaths in patients with tuberculosis.* Arch Intern Med. 1998; 158(17) : 1916-22.p Abstract: BACKGROUND: Deaths from tuberculosis (TB) continue to occur despite the availability of effective antimicrobial agents. Multidrug resistance, human immunodeficiency virus (HIV) infection, and delayed therapy have been implicated. OBJECTIVE: To examine clinical factors associated with in-hospital death in patients with active TB. METHODS: A retrospective case-control study was performed on patients admitted to a government hospital in Johannesburg, South Africa, used as a referral center for patients with TB. Eighty patients admitted with TB who died during hospitalization were matched with 80 similar patients with TB who survived hospitalization. Clinical, demographic, and radiological characteristics of each group were compared. RESULTS: In-hospital fatalities were associated with female sex (P=.01), lower admission hemoglobin level (P<.01), and weight (P<.01), and a trend to more extensive infiltrative patterns on chest radiographs. Multidrug resistance, extrapulmonary disease, and HIV infection were unexpectedly not related to in-hospital mortality. High mortality in the first weeks of admission suggested that late presentation was a major factor for in-hospital death. The HIV-infected participants in the study showed less drug resistance than HIV-negative patients (P=.07), equivalent extents of infiltrative patterns on chest radiographs, but much less cavitation and fibrosis (P<.01). CONCLUSIONS: Clinical predictors of early mortality from TB included anemia, low body weight, and extensive infiltrates, while multidrug resistance and HIV infection were not significant factors. Previous exposure to TB and delayed presentation may have influenced our findings. Since patients present late in their illness, aggressive case finding would be important in controlling TB in this population.

Sader H.S. *Antimicrobial resistance in Brazil: comparison of results from two multicenter studies.* Braz J Infect Dis. 2000; 4(2) : 91-9.p Abstract: To evaluate whether our previous study of the antimicrobial resistance patterns in three centers in Brazil represented the pattern in the country as a whole, the results were compared to new data on 855 isolates from 20 clinical laboratories and 36 hospitals located in different regions of Brazil. Both multicenter studies showed high rates of antimicrobial resistance among Gram-negative bacilli isolated in Brazilian hospitals with the most important problems being: 1) E.coli and K.pneumoniae that produce ESBL; 2) Enterobacter spp. which likely express chromosomally mediated (AmpC) stably derepressed cephalosporinases producing resistance to third-generation cephalosporins and broad spectrum penicillins; 3) carbapenem resistance among Acinetobacter spp. and P.aeruginosa; and 4) fluoroquinolone and aminoglycoside resistance among many Gram-negative species. Our results emphasize the importance of regional antimicrobial resistance surveillance programs in guiding empirical therapy and for focusing intervention controls of antimicrobial resistance. Although the SENTRY Program has only three participating centers in Brazil, its results were validated by a larger Brazilian multicenter study.

Sader H.S. et al. *Piperacillin/Tazobactam: Evaluation of Its In vitro Activity against Bacteria Isolated in Two Brazilian Hospitals and an Overview of Its Antibacterial Activity, Pharmacokinetic Properties and Therapeutic Potential.* Braz J Infect Dis. 1998; 2(5) : 241-255.p Abstract: Piperacillin/tazobactam is a highly active antibiotic against most clinically important species of Gram-negative and positive bacteria, including anaerobes. It has never been used or tested against bacteria isolated in Brazil. In this article we report the in vitro activity of piperacillin/tazobactam against clinical isolates from two tertiary hospitals in Sao Paulo and Rio de Janeiro and review the evolving clinical literature. The study was performed before its commercialization in Brazil. Its activity was compared to that of several broad-spectrum antimicrobial agents commercially available in Brazil. Piperacillin/tazobactam was active against 83% of the isolates tested, while imipenem was active against 91%, cefepime 77%, and ciprofloxacin 73%. Against Enterobacteriaceae (n=398), cefepime was more active than piperacillin/tazobactam (92% versus 88%). Klebsiella pneumoniae strains (n=95) presented low susceptibility to piperacillin/tazobactam (79%), ceftazidime (67%), and to cefepime (82%) indicating a high percentage of ESBL-producing strains. The most active compounds against this species were imipenem (100%) and ciprofloxacin (93%). Piperacillin/tazobactam was the most active compound against Gram-positive cocci (n=238; percentage of susceptibility rank order: piperacillin/tazobactam = imipenem > ciprofloxacin > cefepime) and the second most active against nonenteric Gram-negative bacilli (n=250, rank order: imipenem [72%] > piperacillin/tazobactam [60%] > cefepime [56%] > ceftazidime [52%] > gentamicin [45%] > ciprofloxacin = aztreonam [42%]). Cefepime was the most active compound against P. aeruginosa (n=128, only 67%), followed by ceftazidime (64%), piperacillin/tazobactam (63%) and imipenem (59%). Only imipenem (91%) was active against more than 50% of the A. baumannii isolates (n=79) tested. Piperacillin/tazobactam was the second most active compound against A. baumannii (49%) and the most active against B. cepacia (91%). Our results demonstrated a high level of antimicrobial resistance in the hospitals evaluated, especially among nonenteric Gram-negative bacilli; and clonal dissemination of multiresistant strains. Piperacillin/tazobactam may contribute to the treatment of nosocomial infections in Brazil, however, some degree

of resistance was detected in some species in the instance of frequent multiresistant bacteria in the tertiary level hospitals where the drug was evaluated.

Sader H.S. et al. *Antimicrobial susceptibility patterns for pathogens isolated from patients in Latin American medical centers with a diagnosis of pneumonia: analysis of results from the SENTRY Antimicrobial Surveillance Program (1997). SENTRY Latin America Study Group.* Diagn Microbiol Infect Dis. 1998; 32(4) : 289-301.p Abstract: Pneumonia is the most common fatal hospital-acquired infection, with attributable mortality rates ranging from 30 to 60%. Rapid initiation of optimal antimicrobial therapy is essential for obtaining treatment success. In this report the antimicrobial susceptibility of 556 strains from the lower respiratory tract were collected by the SENTRY Antimicrobial Surveillance Program (1997). These strains were isolated from hospitalized patients with pneumonia in 10 Latin American centers (6 countries) as part of this 68-center worldwide program. The isolates were susceptibility tested against more than 70 drugs (35 reported) by the reference broth microdilution method. Klebsiella pneumoniae and Escherichia coli phenotypically consistent with extended spectrum beta-lactamase (ESBL) production were characterized further by ribotyping and pulsed-field gel electrophoresis. The five most frequently isolated species were (n/%): Pseudomonas aeruginosa (149/26.8%), Staphylococcus aureus (127/22.8%), Acinetobacter spp. (66/11.9%), Klebsiella spp. (56/10.1%), and Enterobacter spp. (40/7.2%). P. aeruginosa demonstrated high rates of resistance to a majority of the antimicrobial drugs tested. Carbapenems, amikacin, and piperacillin/tazobactam demonstrated the highest susceptibility rates (73.8-77.2%) against P. aeruginosa, however the lowest resistance rate was observed for cefepime (6.7%). Acinetobacter spp. also showed very high rates of resistance and the most active compounds were imipenem and meropenem (89.0% susceptibility) followed by the tetracyclines. Cephalosporin susceptibilities among Klebsiella spp. were low: cefoxitin, 73.0%; ceftazidime, 69.4%; and ceftriaxone, 65.9%. Approximately 37% and 28% of K. pneumoniae and E. coli isolates, respectively, were considered ESBL producers based on NCCLS criteria. Ceftriaxone was active against only 52.5% of Enterobacter spp. isolates, whereas cefepime was active against 90.0% of isolates (MIC50, < or = 0.12 microgram/mL). Oxacillin resistance was detected in nearly 50% of S. aureus isolates. The most active drugs against S. aureus were vancomycin, teicoplanin, and quinupristin/dalfopristin (MIC90, 1 microgram/mL). In summary, our study of pneumonias in Latin American medical centers demonstrated a greatly increased prevalence of Acinetobacter spp. and higher resistance rates among Gram-negative bacilli when compared with similar controlled studies from North America.

Sader H.S. et al. *Atividade antimicrobiana in vitro da cefpiroma em comparação com outros beta-lactf micos de amplo espectro contra 804 amostras clínicas de nove hospitais brasileiros.* Rev. Assoc. Med. Bras (1992). 1998; 44(4) : 283-8.p Abstract: OBJETIVO. Avaliar a atividade in vitro da cefalosporina de quarta geraçao, cefpiroma em comparaçao com ceftazidima, ceftriaxona, cefotaxima e imipenem em um estudo multicˆntrico envolvendo nove hospitais de seis cidades em quatro estados. MATERIAL E MÉTODOS. Foram estudadas 804 amostras clínicas isoladas em pacientes internados em unidades de terapia intensiva ou unidades de oncohematologia. As amostras foram coletadas no período de junho a novembro de 1995, isto é, antes da cefpiroma estar disponível comercialmente no Brasil, e testadas através do método de microdiluiçao em placas conforme descrito pelo National Committee for Clinical Laboratory Standards (NCCLS). Todas as amostras resistentes … cefpiroma foram retestadas utilizando-se o E-test. RESULTADOS. Contra as amostras de enterobactérias (n=344), a cefpiroma apresentou atividade de 2 a 32 vezes superior …quela apresentada pelas cefalosporinas de terceira geraçao (CTGs) e semelhnate …quela apresentada pelo imipenem. As porcentagens de enterobactérias sensíveis foram: 88 por cento para a cefpiroma, 69 por cento para as CTGs e 96 por cento para o imipenem. O espectro de açao da cefpiroma foi maior ou igual ao do imipenem contras as espécies Citrobacter freundii, E. aerogenes, Morganella morganii e Serratia marcescens. Contra Acinetobacter sp. (n=77), a cefpiroma foi ligeiramente mais ativa que a ceftazidima, porém as porcentagens de resistˆncia foram muito altas para esses compostos (84 por cento e 88 por cento respectivamente). As atividades da cefpiroma, ceftazidima e imipenem foram semelhantes contra Pseudomonas aeruginosa (n=128), com MIC50/porcentagem de sensibilidade de 8/59 por cento, 8/62 por cento e 4/62 por cento respectivamente. Contra bactérias aeróbias gram-positivas, a cefpiroma foi de 4 a 16 vezes mais ativa que as CTGs.

Sader H.S. et al. *Bacterial pathogens isolated from patients with bloodstream infections in Latin America, 1997: Frequency of occurrence and antimicrobial susceptibility patterns from the SENTRY antimicrobial surveillance program.* Braz. j. infect. dis. 1999; 3(3) : 97-110.p Abstract: We report the antimicrobial susceptibility of 736 organisms isolated from bloodstream infections in 10 Latin American medical centers during the first six months of 1997. The data presented here is from the SENTRY Antimicrobial Surveillance Program, a comprehensive surveillance study involving 72 medical centers worldwide. The isolates were tested for in vitro susceptibility to 35 antimicrobial agents by the broth microdilution method. The five most frequently isolated species were(n/percent): Staphylococcus aureus (165/22.4 percent), Escherichia coli (118/16.0 percent), coagulaseànegative staphylococci (CoNS à 115/15.6 percent), Pseudomonas aeruginosa (51/6.9 percent), Klebsiella ssp. (46/6.3 percent). Susceptibility to oxacillin was 70.9 percent for S.aureus and only 33.9 percent for CoNS. Vancomycin was active against all of staphylococci, while teicoplanin was active against 99.4 percent of S.aureus and only 90.4 percent of CoNS. The new fluoroquinolones sparfloxacin, gatifloxacin, and trovafloxacin, and the streptogramin, quinupristin/dalfopristin, were very active against these species. Only one vancomycinàresistant enterococcus was detected; however, highàlevel aminoglycoside resistance rates were common (66.7 percent). E.coli and Klebsiella spp. showed low susceptibilities for cefotaxime (90.7 percent and 41.3 percent) and for cefoxitin (85.6 percent and 78.3 percent respectively), indicating a high frequency of isolates that produce ESBL and/or stably derepressed ampC enzymes. These strains, phenotypically consistent with extendedàspectrum áàlactamase (ESBL) production, were typed using ribotyping and pulsedàfield gel electrophoresis. The most active compounds (MIC90 in æg/mL/ percent susceptibility) against P. aeruginosa were meropenem (2/94.1 percent), followed by amikacin (>32/86.3 percent), and piperacillin alone or with tazobactam (128/84.3 percent). Ceftazidime and cefepime showed similar activity (70.6 percent susceptibility) and levofloxacin was the most active fluoroquinolone (MIC50 menor do que 0.5; 76.5 percent susceptibility) against this gramànegative species. These results show the unique pattern of bloodstream isolates for Latin America and they demonstrate the present utility of several classes of compounds against emerging antimicrobialàresistant species in this region.(AU).

Sader H.S. et al. *Results of the 1997 SENTRY Antimicrobial Surveillance Program in three Brazilian medical centers.* Braz. j. infect. dis. 1999; 3(2) : 63-79.p Abstract : The SENTRY Antimicrobial Surveillance Program began in January, 1997, and is designed to monitor nosocomial and selected community acquired infections via a worldwide surveillance network of sentinel hospitals distributed equally by geographic location and size. Three sites in Brazil - Rio de Janeiro, Florianópolis, and São Paulo - participated in the SENTRY Antimicrobial Surveillance Program stet. Rank order of occurrence and antimicrobial susceptibillity of pathogenic species causing bloodstream infections, pneumonia, wound or skin and soft tissue infections, and urinary tract infections (UTI) in hospitalized patients were determined by collecting consecutive isolates over a specified period of time. Antimicrobial susceptibilities of Streptococcus pneumoniae, Haemophilus influenzae, and Moraxella catarrhalis obtained from outpatients with respiratory tract infections were also evaluated. The isolates for the evaluated infections were: 1) bloodstream - 20 con-

secutive isolates in each calendar month during a 12-month period; 2) pneumonia - 100 consecutive isolates over a 6 month period; 3) wound or skin and soft tissue - 50 consecutive isolates over a 3 month period; and 4) UTI - 50 consecutive isolates over a 3 month period. Each hospital also contributed, over a 6 month period, consecutive clinically significant outpatient isolates (one isolate per patient) of S. pneumoniae, H. influenzae, and M. catarrhalis that were considered pathogens in respiratory tract infections. Data collected for each isolate included species identification, antimicrobial susceptibility profile, data of isolation, and specimen type. Molecular studies were performed on selected isolates. A total of 1,241 bacterial strains were obtained; the majority were cultured from hospitalized patients, while 139 were fastidious organisms from community acquired respiratory tract infections. Gram-negative bacilli and S. aureus were the predominant pathogens, and Enterobacter spp. was a significant pathogen. The predominance of P. aeruginosa and Acinetobacter spp. and the significant levels of resistence to most agents are of major concern, as is the epidemic rate of ESBL-producing strains of Klebsiella spp. and E. coli in Brazil, which is much higher than rates seen in other areas of the world. Resistance among P. aeruginosa and the Enterobacteriaceae to fluoroquinolones, oxacillin-resistant S. aureus, and penicillin- and trimethoprim-sulfamethoxazole-resistant pneumococci were other...(AU);.

Sadick N.S. et al. *The intrinsic antimicrobial activity of selected sclerosing agents in sclerotherapy.* Dermatol Surg. 1996; 22(4) : 369-71.p Abstract: BACKGROUND. Detergent sclerosing agents may have intrinsic antimicrobial properties. In addition, they may have synergistic effects with other antibiotics such as penicillin. They may induce suppression of intrinsic resistance to penicillin in Staphylococcus aureus. OBJECTIVE. It is in this setting that the present study was carried out in order to determine the degree of suppression of resistance to methicillin and oxacillin in S. aureus by two detergent sclerosing solutions. METHODS. Four strains of S. aureus including a quality control strain were isolated. The minimal inhibitory concentration (MIC) of Sotradecol 1.0% and Polidocanol 0.5% were determined in Mueller Hinton Broth. These dilutions were subsequently seeded with 10(5) organisms of the strain of S. aureus being tested. Serial dilutions of penicillin were made and then the sclerosing agents were added in the appropriate dilutions. RESULTS. Sotradecol 1.0% produced a MIC of 1/64 in two strains of S. aureus and 1/128 in two other variant strains. Polidocanol 0.5% produced a MIC of 1/64 against two strains of S. aureus and an MIC of 1/8 and 1/4 with two other variant strains. In addition, in three of the four S. aureus strains both sclerosing agents had synergistic activity with penicillin and augmented its activity approximately 16-fold. CONCLUSION. This study presents the first successful modification in which detergent sclerosing solutions influence methicillin resistance in a Staphylococcal species. This points out a new potential therapeutic indication for this class of agents.

Sadler D.J. et al. *Image-guided central venous catheter placement for apheresis in allogeneic stem cell donors.* J Clin Apheresis. 2000; 15(3) : 173-5.p Abstract: Peripheral blood stem cell harvest by apheresis is an increasingly important procedure utilized in the treatment of many malignancies. Whether autologous or allogeneic, it is frequently performed via peripheral access because of concern over major complications associated with central venous catheter placement. This study was to determine the safety and success, complications and premature failure rates for radiolocally placed ultrasound-guided non-tunneled central venous catheters placed for apheresis in a donor (allogeneic) population. One hundred central venous catheters were placed in ninety-one individuals for allogeneic stem cell harvest. Procedural success and complications relating to placement were noted in all. In 97 cases the number of needle passes required for venous cannulation and whether this was achieved with a single wall puncture was noted. Duration of catheterization and reason for removal were recorded in all cases. All catheters were placed by a right transjugular route. Venous cannulation and functioning line placement was achieved in every case; 92/97 (95%) required only a single needle pass and 84/97 (87%) only a single wall puncture. There were no placement related complications; 94 catheters were removed the same day with the remainder removed within 48 hr. All completed apheresis. Our study demonstrates the safe use of central venous catheters for apheresis in normal donors if ultrasound guidance is used for the puncture and the duration of catheterization is short. Copyright 2000 Wiley-Liss, Inc.

Saez-Llorens X. et al. *Impact of an antibiotic restriction policy on hospital expenditures and bacterial susceptibilities: a lesson from a pediatric institution in a developing country.* Pediatr Infect Dis J. 2000; 19(3) : 200-6.p Abstract: BACKGROUND: In an era of growing concern about bacterial resistance and hospital costs, limiting the use of broad spectrum antibiotics is important. OBJECTIVES: To evaluate the effects of an antibiotic restriction policy on expenditures, antimicrobial resistance rates and clinical outcomes of hospitalized children. DESIGN: Starting in January, 1997, a prior consultation with an infectious disease specialist for using restricted antibiotics was required in all hospital areas. A retrospective assessment of study objectives obtained 2 years before (1995, 1996) and 2 years after (1997, 1998) initiation of the restriction policy was performed. SETTING: The present study was conducted in a 500-bed university hospital serving children nationwide of a developing country, Panama. RESULTS: Total expenditures for antimicrobial agents decreased by 50%, from $699,543 (US dollars) during 1995 and 1996 to $347,261 during 1997 and 1998. Susceptibility rates of many nosocomial isolates (especially staphylococci and Gram-negative enteric bacilli) usually improved for restricted antibiotics with >35% reduction in utilization (notably for gentamicin, third generation cephalosporins, piperacillin and vancomycin). Major improvements in bacterial susceptibilities were observed in the nursery, a place harboring microorganisms exhibiting the higher initial resistance rates of the hospital. No differences in days of hospital stay and mortality rates of all patients and of children with nosocomial infections were detected during the study period. CONCLUSIONS: Requirement for prior approval of selected antimicrobial drugs in a pediatric institution decreases hospital expenditures and improves susceptibilities to antibiotics without compromising patient outcomes or length of hospital stays.

Saha S.K. et al. *Antimicrobial resistance and serotype distribution of Streptococcus pneumoniae strains causing childhood infections in Bangladesh, 1993 to 1997.* J Clin Microbiol. 1999; 37(3) : 798-800.p Abstract: Three hundred sixty-two Streptococcus pneumoniae strains were isolated from children under 5 years of age at Dhaka Shishu (Children) Hospital from 1993 to 1997. The strains were isolated from blood (n = 105), CSF (n = 164), ear swab (n = 61), eye swab (n = 20), and pus (n = 12). Of the 362 isolates, 42 (11.6%) showed intermediate resistance (MIC, <0.1 microgram/ml) and only 4 (1.1%) showed complete resistance (MIC, >2.0 microgram/ml) to penicillin. Penicillin resistance exhibited a strong relationship with serotype 14; 47.8% of the penicillin-resistant strains belonged to this type. A remarkably high (64.1%) resistance to co-trimoxazole was observed, along with a significant increase during the time period studied; there was no relationship to capsular type. By way of contrast, penicillin resistance did not show any significant change during the study period. Resistance to chloramphenicol (2.2%) and erythromycin (1.1%) was rare. The high resistance to co-trimoxazole and its increasing trend demand elucidation of the clinical impact of pneumonia treatment by this antimicrobial and reconsideration of the World Health Organization recommendation for co-trimoxazole administration to children with community-acquired pneumonia at the health care worker level in Bangladesh.

Sahm D.F. et al. *Resistance surveillance of Streptococcus pneumoniae, Haemophilus influenzae and Moraxella catarrhalis isolated in Asia and Europe, 1997-1998.* J Antimicrob Chemother. 2000; 45(4) : 457-66.p Abstract: A multicentre, collaborative study was performed in

Asia and Europe during the winter of 1997-1998 to determine the in vitro activity of selected antimicrobial agents against common respiratory pathogens. Streptococcus pneumoniae, Haemophilus influenzae and Moraxella catarrhalis isolates were collected from 48 sites in China, France, Germany, Italy, Japan, Spain and the UK and tested in a central laboratory in the USA. Broth microdilution MICs were determined for beta-lactams (penicillin, amoxycillin/clavulanate, cefuroxime, ceftriaxone), macrolides (azithromycin, clarithromycin), sulphonamides (co-trimoxazole), glycopeptides (vancomycin) and fluoroquinolones (levofloxacin). The percentage of isolates susceptible to each antimicrobial class varied substantially by country. Penicillin susceptibility amongst pneumococci ranged from 34% in France and Spain to 92% in Germany, and macrolide susceptibility varied between 26% in China and 91% in the UK. In most countries beta-lactam, macrolide and cotrimoxazole resistance was more prevalent amongst penicillin-intermediate and -resistant S. pneumoniae isolates. However, little or no resistance was detected to levofloxacin (0.3% intermediate and resistant) or vancomycin (0% intermediate and resistant). For H. influenzae the prevalence of beta-lactamase production varied from 6% in China and Germany to 32% in Spain, and for M. catarrhalis, from 79% in Germany to 98% in Japan. With the exception of ampicillin, beta-lactamase production had a minimal effect on beta-lactam activity against H. influenzae or M. catarrhalis. Our findings demonstrate that antimicrobial resistance profiles of common respiratory isolates differ dramatically between countries in Asia and Europe.

Sahm D.F. et al. *Antimicrobial resistance in key bloodstream bacterial isolates: electronic surveillance with the Surveillance Network Database—USA.* Clin Infect Dis. 1999; 29(2) : 259-63.p Abstract: To assess the prevalence of antimicrobial-resistant pathogens among the most common bloodstream isolates, we examined antimicrobial susceptibility data from The Surveillance Network Database-USA, an electronic surveillance system that collects data from 118 clinical microbiology laboratories across the United States. Between 1995 and 1997, resistance to both vancomycin and ampicillin was much more prevalent among Enterococcus faecium than Enterococcus faecalis, suggesting the need for laboratories to identify to species. When staphylococcal isolates were examined for reduced susceptibility to vancomycin (minimum inhibitory concentration = 4 microg/mL), the frequency was highest in methicillin-resistant coagulase-negative staphylococci. We also learned that nonsusceptibility to ceftazidime in Klebsiella pneumoniae was more prevalent among isolates from blood (12.7%) than among isolates from urine (7.1%) or respiratory sources (9.3%). Although antimicrobial resistance is low overall for isolates of Escherichia coli from blood, the prevalence of cefoxitin resistance among ceftazidime-resistant strains (61.9%) suggests the action of mechanisms other than extended-spectrum beta-lactamase.

Saiman L. et al. *Risk factors for candidemia in Neonatal Intensive Care Unit patients. The National Epidemiology of Mycosis Survey study group.* Pediatr Infect Dis J. 2000; 19(4) : 319-24.p Abstract: BACKGROUND: Candida species are important nosocomial pathogens in neonatal intensive care unit (NICU) patients. METHODS: A prospective cohort study was performed in six geographically diverse NICUs from 1993 to 1995 to determine the incidence of and risk factors for candidemia, including the role of gastrointestinal (GI) tract colonization. Study procedures included rectal swabs to detect fungal colonization and active surveillance to identify risk factors for candidemia. Candida strains obtained from the GI tract and blood were analyzed by pulsed field gel electrophoresis to determine whether colonizing strains caused candidemia. RESULTS: In all, 2,847 infants were enrolled and 35 (1.2%) developed candidemia (12.3 cases per 1,000 patient discharges or 0.63 case per 1,000 catheter days) including 23 of 421 (5.5%) babies < or =1,000 g. After adjusting for birth weight and abdominal surgery, forward multivariate logistic regression analysis demonstrated significant risk factors, including gestational age <32 weeks, 5-min Apgar <5; shock, disseminated intravascular coagulopathy, prior use of intralipid, parenteral nutrition, central venous catheters, H2 blockers, intubation or length of stay > 7 days before candidemia ($P < 0.05$). Catheters, steroids and GI tract colonization were not independent risk factors, but GI tract colonization preceded candidemia in 15 of 35 (43%) case patients. CONCLUSIONS: Candida spp. are an important cause of late onset sepsis in NICU patients. The incidence of candidemia might be decreased by the judicious use of treatments identified as risk factors and avoiding H2 blockers.

Saiman L. et al. *Antibiotic susceptibility of multiply resistant Pseudomonas aeruginosa isolated from patients with cystic fibrosis, including candidates for transplantation.* Clin Infect Dis. 1996; 23(3) : 532-7.p Abstract: Chronic lung disease caused by antibiotic-resistant Pseudomonas aeruginosa in patients with cystic fibrosis (CF) is difficult to treat, especially in those who are lung transplantation candidates. Analysis of antibiotic susceptibility and synergy studies of 1,296 isolates revealed that 172 (13.3%) were multiply resistant (i.e., resistant to two or more classes of anti-Pseudomonas agents). beta-Lactam agents (including imipenem and aztreonam) or aminoglycosides inhibited only 11% of the multiply resistant strains, while ciprofloxacin inhibited 34%. High concentrations of tobramycin and gentamicin (200 micrograms/mL), achievable by aerosol administration, inhibited 95% of isolates and overwhelmed permeability-resistance mechanisms. Antimicrobial pairs tested in checkerboard dilutions of clinically achievable drug concentrations inhibited 75% of the multiply resistant strains. On average, three additive and 2.4 synergistic pairs of antimicrobial agents had activity per strain. Transplantation candidates were older than nontransplantation candidates ($P = .034$), and isolates from transplantation candidates were less likely to be inhibited by antibiotic combinations ($P < .001$). Administration of aerosolized aminoglycosides and synergy testing of antimicrobial combinations may represent viable therapeutic options for patients with CF.

Saint S. *Clinical and economic consequences of nosocomial catheter-related bacteriuria.* Am J Infect Control. 2000; 28(1) : 68-75.p Abstract: Indwelling catheters are strongly associated with the development of bacteriuria, which can lead to significant morbidity in hospitalized patients. This report, a review of the literature, evaluates the infectious outcomes of patients with indwelling catheters to determine the precise clinical and economic impact of catheter-related infection. Statistical pooling was used to estimate the incidence of bacteriuria in hospitalized patients with indwelling catheters. In addition, the proportion of patients with catheter-related bacteriuria in whom symptomatic urinary tract infection and bacteremia will develop was estimated through quantitative synthesis of previous reports. Costs were estimated by using microcosting techniques. Of patients who have indwelling catheters for 2 to 10 days, bacteriuria is expected to develop in 26% (95% confidence interval [CI], 23% to 29%). Among patients with bacteriuria symptoms of urinary tract infection will develop in 24%, (95% CI, 16% to 32%), and bacteremia from a urinary tract source will develop in 3.6% (95% CI, 3.4% to 3.8%). Each episode of symptomatic urinary tract infection is expected to cost an additional $676, and catheter-related bacteremia is likely to cost at least $2836. Given the clinical and economic burden of urinary catheter-related infection, infection control professionals and hospital epidemiologists should use the latest infection control principles and technology to reduce this common complication.

Saint S. et al. *The potential clinical and economic benefits of silver alloy urinary catheters in preventing urinary tract infection.* Arch Intern Med. 2000; 160(17) : 2670-5.p Abstract: BACKGROUND: Catheter-associated urinary tract infection (UTI) is associated with increased morbidity, mortality, and costs. A recent meta-analysis concluded that silver alloy catheters reduce the incidence of UTI by 3-fold; however, clinicians must decide whether the efficacy of such catheters is worth the extra per unit cost of $5.30. OBJECTIVE: To assess the clinical and economic impact of using silver alloy urinary catheters

in hospitalized patients. METHODS: The decision model, performed from the health care payer's perspective, evaluated a simulated cohort of 1000 hospitalized patients on general medical, surgical, urologic, and intensive care services requiring short-term urethral catheterization (2-10 days). We compared 2 catheterization strategies: silver alloy catheters and standard (noncoated) urinary catheters. Outcomes included the incidence of symptomatic UTI and bacteremia and direct medical costs. RESULTS: In the base-case analysis, use of silver-coated catheters led to a 47% relative decrease in the incidence of symptomatic UTI from 30 to 16 cases per 1000 patients (number needed to treat = 74) and a 44% relative decrease in the incidence of bacteremia from 4.5 to 2.5 cases per 1000 patients (number needed to treat = 500) compared with standard catheters. Use of silver alloy catheters resulted in estimated cost savings of $4.09 per patient compared with standard catheter use ($20.87 vs $16.78). In a multivariate sensitivity analysis using Monte Carlo simulation, silver-coated catheters provided clinical benefits over standard catheters in all cases and cost savings in 84% of cases. CONCLUSIONS: Using silver alloy catheters in hospitalized patients requiring short-term urinary catheterization reduces the incidence of symptomatic UTI and bacteremia, and is likely to produce cost savings compared with standard catheters.

Saita T. et al. *A highly sensitive ELISA for the quantification of polymyxin B sulfate in human serum*. Biol Pharm Bull. 1999; 22(12) : 1257-61.p Abstract: A highly sensitive ELISA for the determination of polymyxin B sulfate (PMB) was developed which is capable of measuring as low as 32 pg/ml. Anti-PMB antibody was obtained by immunizing rabbits with PMB conjugated with mercaptosuccinyl bovine serum albumin (MS. BSA) using N-(gamma-maleimidobutyryloxy) succinimide (GMBS) as a heterobifunctional coupling agent. An enzyme marker was similarly prepared by coupling PMB with horseradish peroxidase (HRP) employing GMBS. This ELISA showed very low reactivity with the PMB analogue, polymyxin E (0.05%). The values for PMB concentration detected by this assay were comparable with those detected by the bioassay. Moreover, the ELISA was about 10,000 times more sensitive in detecting PMB at lower concentrations. Serum PMB concentration after the oral administration of a PMB tablet to human subjects was determined by the ELISA. PMB was rapidly absorbed from the gastrointestinal tract after the administration, then slowly decreased. These results indicate that the ELISA may be a valuable tool for studies of the pharmacokinetics and pharmacodynamics of the anti-endotoxin drug, PMB.

Sakamoto M. et al. *Sepsis associated with hematological malignancies: prophylaxis of Pseudomonas aeruginosa sepsis.* Kansenshogaku Zasshi. 1996; 70(2) : 116-22.p Abstract: Underlying diseases, pathogenic bacteria, clinical background and outcome were studied during 91 febrile episodes complicated by sepsis in 55 patients with hematological malignancies, who had been admitted to our hospital (Jikei University Kashiwa Hospital) between January 1990 and December 1994. Particularly in patients with P. aeruginosa sepsis, we compared the prophylactic effect of ciprofloxacin (CPFX) alone with that of the combination of polymyxin B (PL-B) plus kanamycin (KM). The major underlying diseases were acute myelocytic leukemia and malignant lymphoma, followed by myelodysplastic syndrome, acute lymphocytic leukemia and chronic myelocytic leukemia. Nearly two-thirds of the pathogenic microorganisms isolated were gram-positive bacteria (including coagulase-negative staphylococci and Staphylococcus aureus); approximately one-quarter were gram-negative bacteria (such as Pseudomonas aeruginosa), and the remainder were fungi. These microorganisms usually induced sepsis when granulocyte counts were decreased. Sepsis was a direct cause of death in about 60% of the patients and P. aeruginosa sepsis had the worst outcome. Oral administration of CPFX was more effective than PL-B plus KM in preventing P. aeruginosa sepsis. The difference in effectiveness might depend on the absorption profile of the drugs.

Sakata H. et al. *Outbreak of severe infection due to adenovirus type 7 in a paediatric ward in Japan*. J Hosp Infect. 1998; 39(3) : 207-11.p Abstract: Between November 1996 and January 1997, 14 patients were diagnosed as having infection caused by adenovirus type 7 in a paediatric ward of Asahikawa Kosei Hospital. The age range of the patients was from two months to five years. Their diseases and abnormal laboratory findings were pneumonia in all 14, leukocytopenia in 10, myositis in nine, gastroenteritis in eight, encephalitis in five, liver dysfunction in three, pleuritis in two, inappropriate secretion of antidiuretic hormone syndrome in two, and thrombocytopenia in two. The infected patients, except for the first had been hospitalized in the paediatric ward for treatment of another disease and re-admitted because of high fever and coughing a few days after improvement or discharge. It is thought that the cause of the outbreak was hospital-acquired infection.

Sakka S.G. et al. *Do fluid administration and reduction in norepinephrine dose improve global and splanchnic haemodynamics?* Br J Anaesth. 2000; 84(6) : 758-62.p Abstract: We studied global and splanchnic haemodynamics in patients with septic shock, while reducing norepinephrine doses by progressive fluid loading administration. Ten patients (six female, four male, aged 39-86 yr, mean 61 yr) were assessed using a transpulmonary thermo-dye dilution technique to measure cardiac output, intrathoracic blood volume and total blood volume. Splanchnic blood flow was measured by the steady state indocyanine green technique using a hepatic venous catheter. Gastric mucosal blood flow was estimated by regional carbon dioxide tension (PRCO2). Hydroxyethylstarch was infused in two stages while maintaining mean arterial pressure, allowing a reduction in norepinephrine dose from 0.54 to 0.33 to 0.21 microgram kg-1 min-1. Mean (SD) heart rate significantly decreased, from 104 (13) to 94 (15) beats min-1. Total blood volume index (mean (SD)) increased from 2650 (638) to 3655 (885) ml m-2, intrathoracic blood volume index from 888 (204) to 1050 (248) ml m-2 and cardiac index from 3.6 (1.0) to 4.0 (0.9) litres min-1 m-2. Splanchnic blood flow did not change significantly—either absolute (from 0.81 to 0.98 litres min-1 m-2) or fractional (from 22.3% to 23.9%). Gastric mucosal (PRCO2) increased from 7.5 (2.5) to 9.0 (2.8) kPa. The PCO2 gap, i.e. the difference between regional and end-tidal PCO2, increased from 3.1 (2.5) to 4.0 (2.9) kPa. Marked individual variation in responses suggests that norepinephrine dose reduction by fluid loading in patients with stabilized septic shock does not necessarily increase global or splanchnic blood flow.

Sakumoto M. et al. *Distribution of a methicillin-resistance gene in urinary isolates of methicillin-resistant staphylococci examined by enzymatic detection of the polymerase chain reaction*. Chemotherapy. 1996; 42(5) : 329-33.p Abstract: We tried to examine the susceptibility to various antimicrobial agents and to detect the mec A gene using enzymatic detection of the polymerase chain reaction in methicillin-resistant Staphylococcus aureus (MRSA), methicillin-sensitive Staphylococcus aureus (MSSA) and Staphylococcus epidermidis isolated from patients with complicated urinary tract infections (UTIs). All the strains of MRSA and MSSA showed a low sensitivity to imipenem (IPM), ceftazidime (CAZ), flomoxef (FMOX), amikacin (AMK), ciprofloxacin (CPFX) and ofloxacin (OFLX). Although all the strains of MRSA had the mec A gene, none of the MSSA strains had it. 74% of S. epidermidis had the mec A gene and strains resistant to methicillin were seen in 72% of them. The mec A-positive S. epidermidis showed a lower susceptibility to IPM, CAZ, FMOX, AMK, CPFX and OFLX than the mec A-negative strains. These results suggest that methicillin resistance was due to the mec A gene in MRSA and methicillin-resistant S. epidermidis (MRSE), and that MRSEs were very common among the bacteria causing complicated UTI. When we try to control nosocomial infections due to MRSA, it should also be noted that MRSE can be a reservoir of the mec A gene.

Sakuragi T. et al. *Bactericidal activity of 0.5% bupivacaine with preservatives on microorganisms in the human skin flora*. Reg Anesth. 1997; 22(2) :

178-84.p Abstract: BACKGROUND AND OBJECTIVES: The bactericidal activity of 0.5% bupivacaine with preservatives at body temperature and at room temperature is not known. We studied the bactericidal activity of 0.5% bupivacaine with 0.08% methyl para-oxybenzoate and 0.02% propyl para-aminobenzoate as preservatives and of the preservatives alone at 37 degrees C and at room temperature on two strains of methicillin-resistant Staphylococcus aureus, two strains of methicillin-susceptible S. aureus, and one strain each of Staphylococcus epidermidis and Escherichia coli. METHODS: The pathogen was exposed to 0.5% bupivacaine with preservatives or to the preservatives alone for 1, 3, 6, 12, and 24 hours at 37 degrees C and at room temperature. The inocula from these suspensions were cultured for 48 hours at 37 degrees C after the antimicrobial activity of bupivacaine was inactivated by 1:1,000 dilution with physiological saline. RESULTS: The 1- through 12-hour exposures of four strains of S. aureus to 0.5% bupivacaine with preservatives at room temperature reduced the mean colony count by 24.2%, 49.2%, 71.3%, and 89.6%, respectively, and the exposure at 37 degrees C reduced the count by 74.1%, 95.2%, 99.9%, and 99.8%, respectively. The differences for 1- through 12-hour exposures were significant (P <.001). The percentage kill in the strains of E. coli and S. epidermidis was significantly higher than that in the strains of S. aureus at all exposure times at room temperature (E. coli, P <.001; S. epidermidis, P <.0001) and at 1- and 3-hour exposures at 37 degrees C (E. coli, P <.001; S. epidermidis, P <.0001). The bactericidal activity of the preservatives was markedly lower that that of 0.5% bupivacaine with preservatives (P <.0001). CONCLUSIONS: The bactericidal activity of 0.5% bupivacaine with preservatives is stronger at body temperature than at room temperature; the bactericidal activity may be due, to a large extent, to bupivacaine rather than to the preservatives; and S. aureus is more resistant to the bactericidal activity of bupivacaine than are S. epidermidis and E. coli.

Sakuragi T. et al. *Bactericidal activity of preservative-free bupivacaine on microorganisms in the human skin flora*. Acta Anaesthesiol Scand. 1998; 42(9) : 1096-9.p Abstract: BACKGROUND: The rate at which the bactericidal activity of preservative-free bupivacaine develops at body temperature and at room temperature is not known. We studied the bactericidal activity of preservative-free bupivacaine on two strains of methicillin-resistant Staphylococcus aureus (MRSA), two strains of methicillin-susceptible S. aureus (MSSA), and each of Staphylococcus epidermidis and Escherichia coli. METHODS: The pathogen was exposed to 0.5% bupivacaine for 1, 3, 6, 12, and 24 h at 37 degrees C and room temperature. In addition, each strain of MRSA, MSSA, and S. epidermidis was exposed to distilled water, and 0.125%, 0.25%, 0.5%, and 0.75% bupivacaine at 37 degrees C. The inocula from the suspensions were cultured for 48 h at 37 degrees C. RESULTS: The 1- through 24-h exposures of 4 strains of S. aureus to 0.5% bupivacaine at room temperature reduced the colony count by 21.7%, 34.7%, 51.1%, 65.6%, and 81.1%, respectively, and the exposure at 37 degrees C reduced the count by 34.1%, 50.8%, 66.3%, 94.5%, and 96.0%, respectively. The differences were significant at all exposure times (P < 0.001, respectively). No organisms grew in the strain of E. coli after 24-h exposure and in the strain of S. epidermidis after 12- and 24-h exposures at 37 degrees C. The percent change from controls in the strains of E. coli and S. epidermidis was significantly higher than that in the strains of S. aureus at all exposure times at room temperature and 37 degrees C (P < 0.0001, respectively). Higher concentrations of bupivacaine were associated with lower colony count. CONCLUSION: Our results show that preservative-free bupivacaine possesses a temperature- and concentration-dependent bactericidal activity, and S. aureus is more resistant to the bactericidal activity of bupivacaine than are S. epidermidis and E. coli.

Sakurai Y. *[Drug-associated hemorrhagic enteritis]*. Nippon Rinsho. 1998; 56(9) : 2382-6.p Abstract: Drug-associated hemorrhagic colitis are divided into antibiotic associated hemorrhagic colitis (AAHC) and other drug associated hemorrhagic colitis. AAHC are mainly caused by oral usage of Ampicillin and its derivatives (85%). Initially AAHC are believed to be caused by Klebsiella oxytoca overgrowth. However, these organisum has no exotoxin like Clostridium difficile and pathogenesis of AAHC are still unresolved. Typical AAHC are diagnosed by colonoscopy with diffuse hemorrhage and edema mainly found in descending colon and transverse colon. NSAIDs are also the cause of hemorrhagic colitis like AAHC. Mephenamic acid are famous for this complication. Diarrhea is one of the main complication of oral 5-fluorouracil administration and even causes hemorrhagic colitis. Its histology are characteristic in gland atrophy. Gold colitis are reported 36 cases in rheumatoid arthritis patients. Exact mechanism of bleeding are not understood. NSAIDs may cause collagenous colitis and or lymphocytic colitis in RA patients. Other rare hemorrhagic colitis are associated with azathioprine, methyl dopa, interferon alfa etc. NSAIDs and anticoagulants are well known drugs for complication of GI bleeding making hemorrhagic enteritis.

Salamon H. et al. *Genetic distances for the study of infectious disease epidemiology.* Am J Epidemiol. 2000; 151(3) : 324-34.p Abstract: Molecular epidemiologic studies of infectious pathogens 1) generate genetic patterns from a collection of microorganisms, 2) compare the degree of similarity among these patterns, and 3) infer from these similarities infectious disease transmission patterns. The authors propose a quantitative approach using genetic distances to study the degree of similarity between patterns. Benefits of such genetic distance calculations are illustrated by an analysis of standard DNA fingerprints of Mycobacterium tuberculosis in San Francisco collected during the period 1991-1997. Graphical representation of genetic distances can assist in determining if the disappearance of a specific pattern in a community is due to interruption of transmission or ongoing evolution of the microorganism's fingerprint. Genetic distances can also compensate for varying information content derived by DNA fingerprints of contrasting pattern complexity. To study demographic and clinical correlates of transmission, the authors calculated the smallest genetic distance from each patient sample to all other samples. With correlation of genetic distances and nearest genetic distances with previously understood notions of the epidemiology of M. tuberculosis in San Francisco, factors influencing transmission are investigated.

Salih H. et al. *Inhibitory effect of heparin on neutrophil phagocytosis and burst production using a new whole-blood cytofluorometric method for determination*. Eur J Med Res. 1997; 2(12) : 507-13.p Abstract: The influence of heparin on Polymorphonuclear (PMN s) leukocytes was investigated using a new whole-blood cytofluorometric method (patent granted for the test with the number P 4334935.8-41) with Candida albicans and Staphylococcus aureus as test microorganisms. After comparing the effect of equal volumes of two widely used heparins we examined the influence of 5 different heparin-concentrations. Using both yeasts and bacteria, we found a significant, dose-depending decrease of the percentage of phagocyting PMN's and of phagocytized microorganisms as well as of the resulting percentage of PMN s producing respiratory burst along the kinetics. Furthermore we could demonstrate that heparin independently of phagocytosis produces a dose-dependent decrease of burst production of PMN's. Our results indicate that the use of heparins as anticoagulant for immunological investigations as well as clinically with patients under immunosuppressive therapy should be critically reconsidered. This applies even more because due to the evaluated dose-dependent decrease of phagocyte function no boundary for the inhibiting effect can be declared.

Salminen S. et al. *Demonstration of safety of probiotics — a review.* Int J Food Microbiol. 1998; 44(1-2) : 93-106.p Abstract: Probiotics are commonly defined as viable microorganisms (bacteria or yeasts) that exhibit a beneficial effect on the health of the host when they are ingested. They are used in foods, especially in fermented dairy products, but also in pharmaceutical preparations. The development of new probiotic strains aims at more active beneficial organisms. In the

case of novel microorganisms and modified organisms the question of their safety and the risk to benefit ratio have to be assessed. Lactic acid bacteria (LAB) in foods have a long history of safe use. Members of the genera Lactococcus and Lactobacillus are most commonly given generally-recognised-as-safe (GRAS) status whilst members of the genera Streptococcus and Enterococcus and some other genera of LAB contain some opportunistic pathogens. Lactic acid bacteria are intrinsically resistant to many antibiotics. In many cases resistances are not, however, transmissible, and the species are also sensitive to many clinically used antibiotics even in the case of a lactic acid bacteria- associated opportunistic infection. Therefore no particular safety concern is associated with intrinsic type of resistance. Plasmid-associated antibiotic resistance, which occasionally occurs, is another matter because of the possibility of the resistance spreading to other, more harmful species and genera. The transmissible enterococcal resistance against glycopeptide antibiotics (vancomycin and teicoplanin) is particularly noteworthy, as vancomycin is one of the last effective antibiotics left in the treatment of certain multidrug-resistant pathogens. New species and more specific strains of probiotic bacteria are constantly identified. Prior to incorporating new strains into products their efficacy should be carefully assessed, and a case by case evaluation as to whether they share the safety status of traditional food-grade organisms should be made. The current documentation of adverse effects in the literature is reviewed. Future recommendations for the safety of already existing and new probiotics will be given.

Salzman M.B. et al. *Intravenous catheter-related infections.* Adv Pediatr Infect Dis. 1995; 10 : 337-68.p Abstract: Vascular catheter-related infection is an important cause of mortality and morbidity in hospitalized patients. The mean incidence of catheter-related bloodstream infection in hospitalized pediatric patients is 2.4 episodes per 1,000 days. Totally implantable central venous catheters may be associated with a lower risk of infection. Coagulase-negative staphylococci are the predominant cause and account for about one third of episodes of catheter-related bloodstream infection. The diagnosis of catheter-related bloodstream infection is often difficult because there are frequently no signs of inflammation around the catheter. Diagnosis depends on either a positive quantitative catheter culture yielding the same microorganism recovered from the bloodstream or differential quantitative blood cultures with significantly greater colony counts from blood drawn through the catheter than from blood drawn through a peripheral vein. Alternatively, probably catheter-related sepsis can be diagnosed when clinical sepsis is refractory to antimicrobial therapy but responds to catheter removal. Often these criteria are not met but catheter-related bloodstream infection is presumed because a common skin microorganism is isolated from the blood when clinical manifestations of bloodstream infection are present and there is no other apparent source of infection. Microorganisms causing catheter-related bloodstream infection gain access to the bloodstream predominantly from either the catheter insertion site or the catheter hub. Most catheter-related infections occurring shortly after catheter insertion probably gain access to the bloodstream by extraluminal migration along the catheter from the skin at the catheter insertion site. When catheters are in place for extended periods, especially greater than 30 days, the catheter hub probably plays a major role in microorganisms gaining access and then migrating endoluminally until reaching the bloodstream. Recently employed strategies for the prevention of catheter-related infections include topical antibiotics or antiseptics at the catheter insertion site, flush solutions containing vancomycin, and bonding antimicrobial agents to the catheter. Infection of peripheral and central venous catheters generally resolves after catheter removal. For tunneled silicone catheters, most episodes of catheter-related infection can be initially managed with antimicrobial therapy infused through the catheter without catheter removal. Staphylococcus aureus is generally more aggressive and associated with more complications than coagulase-negative staphylococci. Microorganisms that usually require catheter removal include Candida and Bacillus species. Adjunctive treatments of catheter infections include the use of urokinase. Catheter-related infection remains an important complication of vascular access. Novel prevention and treatment strategies are currently being investigated. In the near future bonding of antibiotics or other agents to catheters may become routine.(ABSTRACT TRUNCATED AT 400 WORDS).

Samad A. et al. *Anterior chamber contamination after uncomplicated phacoemulsification and intraocular lens implantation*. Am J Ophthalmol. 1995; 120(2) : 143-50.p Abstract: PURPOSE: To determine the frequency of anterior chamber contamination occurring during uncomplicated cataract surgery with intraocular lens implantation using phacoemulsification through a scleral tunnel incision. METHODS: In a prospective study, anterior chamber aspirates of one eye each of 103 consecutive ambulatory patients who underwent uncomplicated cataract surgery with lens implantation were cultured. The anterior chamber aspirate was withdrawn immediately upon the completion of surgery. Conjunctival cultures of the same eye were taken immediately before surgery, after the eye and periocular area had been prepared and draped. Multiple use topical medications used preoperatively on all patients were cultured at the end of the surgical day. RESULTS: Intraocular aspirates yielded positive cultures in five specimens (5%), four of which were identified as Staphylococcus epidermidis. Quantification disclosed colony counts ranging between 100 and 200 colony forming units per milliliter. Results of conjunctival cultures were positive in ten specimens (10%). Staphylococcus epidermidis was the most common isolate, identified in seven of the ten positive cultures. Positive intraocular and conjunctival culture results were not present concurrently in any patient. Microorganisms were recovered from the multiple use topical medications on nine of the 26 successive surgical days. Neisseria species was the most frequent isolate (7,44%), followed by S. epidermidis (5,31%). The frequency of contamination of the anterior chamber was independent of wound width (chi 2 = 0.869) and operative time (chi 2 = 4.77). CONCLUSION: Bacterial contamination of the anterior chamber was detected in five (5%) of the patients. This reduced incidence of contamination compared with that of previous studies may be related to the preoperative preparation, the surgical technique, or both. Contamination of the multiple use topical medications and bulbar conjunctiva define possible sources of pathogens that may enter the anterior chamber. The absence of any clinical ocular infection in all patients attests to the small inoculum sizes, as well as the ability of the anterior chamber to clear small bacterial loads.

Samaranayake L.P. et al. *Guidelines for the use of antimicrobial agents to minimise development of resistance.* Int Dent J. 1999; 49(4) : 189-95.p Abstract: There is currently worldwide concern about the problems of antimicrobial resistance. A number of important bodies such as the World Health Organisation and the British House of Lords have identified the reasons for the emergence of resistance to antimicrobial agents and the preventive measures which need to be urgently implemented to curb the spread of resistant organisms. The reasons for the emergence of resistant organisms are not difficult to find. During the past half-century, since the discovery of penicillin by Fleming, people in both the developing and the developed world have accepted antimicrobial agents as a fundamental right, not only to demand at the first sign of a trivial infection but also to self prescribe with readily available, cheap antimicrobial agents. Such unbridled abuse of antimicrobial agents not only in man but also in animals could lead down a slippery slope to an era where the microbe may rule supreme once again. Indeed some authorities are forecasting a 'post-antibiotic era' (as opposed to the pre-antibiotic era before the discovery of penicillin) in the foreseeable future when many infectious diseases will once again be almost impossible to treat.

Samore M.H. *Epidemiology of nosocomial clostridium difficile diarrhoea*. J Hosp Infect. 1999; 43 Suppl : S183-90.p Abstract: Clostridium difficile is a frequent and clinically important cause of diarrhoea that

has been strongly but not exclusively associated with the hospital setting. The vast majority of cases of C. difficile diarrhoea are associated with antecedent treatment with antibiotics, of which cephalosporins and clindamycin appear to pose the highest risk. Within hospitals and chronic-care facilities, cross-infection of C. difficile has been related to transient carriage on hands of healthcare workers and contamination of diverse environmental surfaces, including electronic rectal thermometers. Prospective epidemiologic studies have demonstrated that acquisition of C. difficile is common in hospitalized patients. Although colonized patients contribute to nosocomial transmission of C. difficile, symptom-free carriage of C. difficile appears to reduce risk of subsequent development of C. difficile diarrhoea. Antimicrobial treatment with oral metronidazole or vancomycin to attempt to eradicate symptomless carriage is not recommended. Measures to control nosocomial C. difficile diarrhoea have focused on improved handwashing, use of barrier precautions with single rooms for symptomatic patients, reduction of environmental contamination, and antibiotic restriction. Restricting clindamycin has been particularly successful in terminating outbreaks of C. difficile diarrhoea associated with its use. The epidemiologic features of C. difficile and strategies for control are similar to those for micro-organisms that have acquired antimicrobial resistance. C. difficile may be indirectly or directly contributing to spread of resistant organisms, for instance, by causing diarrhoea and thereby enhancing environmental contamination with other gastrointestinal flora such as vancomycin-resistant enterococci. Thus, a consideration of C. difficile in the larger context of the world-wide spread of antibiotic resistance offers useful insights that may help form the basis for the development of more effective control measures.

Sampath L.A. et al. *Infection resistance of surface modified catheters with either short-lived or prolonged activity.* J Hosp Infect. 1995; 30(3) : 201-10.p Abstract: It has been suggested that the invasion of microbes into the catheter tract occurs mainly at the time of catheter insertion. To investigate whether the presence of an antimicrobial environment during the initial period after insertion is sufficient to reduce the risk of subsequent catheter colonization and infection, we evaluated the use of benzalkonium chloride-heparin bonded (BZK-hep) central venous catheters, which exhibit short-lived surface antimicrobial activity, using a rat subcutaneous model. Bacterial adherence on these catheters was determined, seven days after challenging the insertion site with 10(6) cfu of Staphylococcus aureus. A chlorhexidine-silver sulphadiazine impregnated catheter (Arrowg+ard), with longer lasting surface antimicrobial activity, and a hydrophilic coated catheter ('Hydrocath'), were evaluated simultaneously for comparison. Unlike Arrowg+ard antiseptic catheters, BZK-hep 'Hydrocath' and control catheters had significant bacterial adherence on their surface. Arrowg+ard catheters were colonized in 19% of the animals compared with 100% in all the other groups ($P < 0.05$; mean cfu cm-2: control = 1.3 x 10(6), BZK-hep = 4.3 x 10(5), Hydrocath = 2 x 10(5), Arrowg+ard = 71). Our results indicate that catheters with short-lived surface antimicrobial activity are unlikely to provide long-term protection against catheter-related infection. The efficacy of Arrowg+ard catheters may be due to the initial high rate of kill and prolonged antimicrobial activity.

Samra Z. et al. *Evaluation of use of a new chromogenic agar in detection of urinary tract pathogens.* J Clin Microbiol. 1998; 36(4) : 990-4.p Abstract: CHROMagar Orientation, a new chromogenic medium, was evaluated for the detection and differentiation of gram-positive and gram-negative pathogenic microorganisms in 900 urine samples from hospitalized patients. Performance characteristics of the medium were evaluated in comparison to those of 5% sheep blood and MacConkey agars by direct inoculation of the urine samples on the three media. Four gram-negative and two gram-positive strains as well as one yeast control strain from the American Type Culture Collection were used to ensure quality control. CHROMagar Orientation succeeded in detecting all the urine pathogens that were detected by the reference media, including gram-negative bacilli, staphylococci, streptococci, and yeasts. Colony color and morphology on CHROMagar Orientation accurately differentiated Escherichia coli, Proteus mirabilis, Proteus vulgaris, Pseudomonas aeruginosa, and Acinetobacter spp. Owing to the similarity in the pigmentation produced by Klebsiella, Enterobacter, and Citrobacter isolates, the medium failed to distinguish among them; however, these isolates were easily recognized as coliforms because of their metallic blue coloration. Staphylococci were clearly perceptible: S. aureus and S. epidermidis grow in regular-size colonies that range from opaque white to yellowish, and S. saprophyticus produces opaque pink colonies. All streptococcus strains, including those from groups B and C, were detected. They grow as undifferentiated flat dry diffused colonies, and additional tests were required for identification. Enterococci were easily discriminated by their strong turquoise pigmentation and their typical growth on the agar's surface. Yeast grow in typical creamy wet convex colonies. The accuracy of antibiotic susceptibility determinations according to standard methods was also tested by picking isolates directly from CHROMagar Orientation. The results showed excellent correlation with those obtained with microorganisms picked from reference media. Owing to the ease in differentiating mixed flora on CHROMagar Orientation, antimicrobic susceptibility tests were performed directly from primary isolates in all cases without the need for subcultures.

Sanchez-Silos R.M. et al. *[Pathogenicity of Enterococcus spp. Characteristics of 169 hospital isolates].* Enferm Infecc Microbiol Clin. 2000; 18(4) : 165-9.p Abstract: BACKGROUND: To know the characteristics of Enterococcus spp. strains isolated in the hospital; to analyse the importance of this microorganism and its resistance to antimicrobial agents. PATIENTS AND METHODS: Retrospective analysis of the case histories of 169 patients with Enterococcus spp. isolates, selected at random at the Infanta Cristina Hospital in Badajoz. Investigation was carried out on: age, date of admission and discharge, clinical symptoms, risk factors, previous antibiotic treatment, clinical and microbiological evolution, recommended treatment and prescribed treatment. Identification of microorganisms and antibiogram with Pos Combo 41 microScam panels, read on Baxter WalkAway-40 equipment. RESULTS: The most frequently found species was Enterococcus faecalis. In 75 cases the isolations were polymicrobial. The enterococci were isolated mainly from urinary infections (27%), skin infections (20%), intrabdominal infections (14%) and infections from surgical wounds (14%). The existence of peripheral catheter was the main risk factor. All the strains of E. faecalis were susceptible to the glycopeptides. Two strains of Enterococcus faecium were not susceptible to vancomycin and one of these was not susceptible to teicoplanin. Mortality was from 21-27.5%. CONCLUSIONS: Enterococcus spp. is frequently isolated in nosocomial infections, although in approximately half the cases it is associated with other bacteria. For this reason, it is not always possible to determine its pathogenic contribution. The isolated strains, except two strains of E. faecium, are susceptible to vancomycin. A relation exists between high resistance to aminoglucosides and resistance to fluoroquinolones.

Sanders C.C. et al. *Ability of the VITEK 2 advanced expert system To identify beta-lactam phenotypes in isolates of Enterobacteriaceae and Pseudomonas aeruginosa.* J Clin Microbiol. 2000; 38(2) : 570-4.p Abstract: The Advanced Expert System (AES) was used in conjunction with the VITEK 2 automated antimicrobial susceptibility test system to ascertain the beta-lactam phenotypes of 196 isolates of the family Enterobacteriaceae and the species Pseudomonas aeruginosa. These isolates represented a panel of strains that had been collected from laboratories worldwide and whose beta-lactam phenotypes had been characterized by biochemical and molecular techniques. The antimicrobial susceptibility of each isolate was determined with the VITEK 2 instrument, and the results were analyzed with the AES to ascertain the beta-lactam phenotype. The results were then compared to the beta-lactam resistance mechanism determined by bio-

chemical and molecular techniques. Overall, the AES was able to ascertain a beta-lactam phenotype for 183 of the 196 (93.4%) isolates tested. For 111 of these 183 (60.7%) isolates, the correct beta-lactam phenotype was identified definitively in a single choice by the AES, while for an additional 46 isolates (25.1%), the AES identified the correct beta-lactam phenotype provisionally within two or more choices. For the remaining 26 isolates (14.2%), the beta-lactam phenotype identified by the AES was incorrect. However, for a number of these isolates, the error was due to remediable problems. These results suggest that the AES is capable of accurate identification of the beta-lactam phenotypes of gram-negative isolates and that certain modifications can improve its performance even further.

Sanders J.W. et al. *Methylobacterium mesophilicum infection: case report and literature review of an unusual opportunistic pathogen.* Clin Infect Dis. 2000; 30(6) : 936-8.p Abstract: Methylobacterium mesophilicum is a methylotrophic, pink pigmented, gram-negative rod that was initially isolated from environmental sources that is being increasingly reported as a cause of opportunistic infections in immunocompromised hosts. We present the case of an immunocompromised woman who developed a central catheter infection with M. mesophilicum and review the other 29 cases reported in the literature, noting that it is frequently resistant to beta-lactam agents but is generally susceptible to aminoglycosides and quinolones.

Sandor G.K. et al. *Antimicrobial treatment options in the management of odontogenic infections.* J Can Dent Assoc. 1998; 64(7) : 508-14.p Abstract: Most acute orofacial infections are of odontogenic origin. In normal hosts, however, they usually do not occur without some type of predisposing condition. Early recognition and management of acute orofacial infections is critical, because rapid systemic involvement can occur, especially in children. Antimicrobial therapy has an essential role in the management of these infections. If it is initiated before surgery, it can shorten the period of infection and minimize associated risks. The etiology of odontogenic infections is usually attributed to the endogenous flora of the mouth, and not to the introduction of non-resident bacteria. Odontogenic infections are typically polymicrobial; however, anaerobes generally outnumber aerobes by at least four fold. The penicillins have historically been used as the first-line therapy in these cases, but increasing rates of resistance have lowered their usefulness. Bacterial resistance to this class of agents is predominately achieved through the production of beta-lactamases. Clindamycin, because of its broad spectrum of activity and resistance to beta-lactamase degradation, is an attractive first-line therapy in the treatment of odontogenic infections.

Sankarasubbaiyan S. et al. *An analysis of the increased demands placed on dialysis health care team members by functionally dependent hemodialysis patients.* Am J Kidney Dis. 2000; 35(6) : 1061-7.p Abstract: A team of health care providers is integral to the care of chronic hemodialysis patients and includes nephrologists, social workers, dietitians, and nurses. Increasingly, the chronic hemodialysis population is composed of older patients with multiple comorbid conditions and reduced functional independence. The demands placed on social workers, nurses, and dietitians caring for the increasingly fragile chronic hemodialysis population have not been examined. We compared the interventions required by social workers, dietitians, and nurses caring for two demographically matched chronic hemodialysis patient groups undergoing dialysis in two outpatient units over a 6-month period to examine the demands imposed by these functionally dependent patients. Patients underwent dialysis in either a step-down unit or an ambulatory unit. Patients undergoing dialysis in the step-down unit had more coronary artery disease (6 of 12 patients [50%] versus 1 of 12 patients; $P < 0.025$) and peripheral vascular disease (6 of 12 versus 0 patients; $P < 0.004$). Mean urea reduction ratio, hematocrit, and serum albumin values, as well as number of hospitalizations and mean days hospitalized for the 6-month study period, were not different between the groups. Patients undergoing dialysis in the step-down unit were more likely to have lower scores on activities of daily living (11 +/- 5 versus 15 +/- 3; $P < 0.02$), live in a nursing home (58% versus 8%; $P < 0.01$), be nonambulatory (66% versus 0%; $P < 0.01$), and have a catheter as permanent dialysis access (66% versus 9%; $P < 0.004$). Significantly more social worker and dietitian time in hours per week were provided to the patients in the step-down unit (social workers, 259 versus 201 h/wk; $P < 0.001$; dietitians, 115 versus 96 h/wk; $P < 0.001$). Similarly, dialysis treatments requiring nursing interventions (treatments with hypotension, 36% versus 13%; obtaining blood cultures, 7% versus 2%; administering intravenous medications, 9% versus 2%; communicating with other health care providers, 3% versus 0.1%; and nondialysis-related interventions, 5% versus 0.5%; all $P < 0.005$) were more common in the patients in the step-down unit. We conclude that increased dialysis provider care is required by patients who are functionally dependent and have increased comorbid conditions. The increased demands this fragile patient population places on dialysis providers must be recognized, examined more closely, and reimbursed appropriately.

Sankari A. et al. *Staphylococcal pericarditis following percutaneous transluminal coronary angioplasty.* Catheter Cardiovasc Interv. 2000; 50(1) : 71-3.p Abstract: Infectious complications occurring after percutaneous transluminal coronary angioplasty are uncommon. We are reporting a case of bacterial pericarditis developing 1 week after coronary angioplasty and stent implantation. Treatment with appropriate antibiotics and drainage of the infected pericardial effusion was followed by a protracted hospital course and eventual control of infection and discharge of the patient.

Sankaridurg P.R. et al. *Bacterial colonization of disposable soft contact lenses is greater during corneal infiltrative events than during asymptomatic extended lens wear.* J Clin Microbiol. 2000; 38(12) : 4420-4.p Abstract: Microorganisms, especially gram-negative bacteria, are considered to play a role in the etiology of certain corneal infiltrative events (CIEs) observed during soft contact lens wear. This study explored the possibility of microbial colonization of soft contact lenses as a risk factor leading to CIEs. In a clinical trial conducted from March 1993 to January 1996, 330 subjects wore disposable soft contact lenses on a 6-night extended-wear and disposal schedule. During this period, 4,321 lenses (118 during CIEs; 4,203 during asymptomatic lens wear) were recovered aseptically and analyzed for microbial colonization. A greater percentage of lenses were free from microbial colonization during asymptomatic wear than during CIEs (42 versus 23%; $P < 0.0001$). The incidence of gram-positive bacteria, gram-negative bacteria and fungi was greater during CIEs than during asymptomatic lens wear ($P < 0.05$). During asymptomatic lens wear, gram-positive bacteria were isolated most frequently and were usually normal external ocular microbiota. Of the gram-positive bacteria, the incidence of Streptococcus pneumoniae was greater during CIE than during asymptomatic wear (7.6 versus 0.6%; $P < 0.0001$). While gram-negative bacteria were seen in few cases during asymptomatic wear, their incidence during CIE in comparison to asymptomatic wear was substantial and significant (23.7 versus 3.8%; $P < 0.0001$). Also, the level of colonization was high. Of CIEs, events of microbial keratitis, contact lens acute red eye, and asymptomatic infiltrative keratitis were associated with lens colonization with gram-negative bacteria or S. pneumoniae. Colonization of soft contact lenses with pathogenic bacteria, especially gram-negative bacteria and S. pneumoniae, appears to be a significant risk factor leading to CIE.

Santos B.A.d. et al. *Estudo da resistência antimicrobiana in vitro das coproculturas positivas para Shigella sp.* J. pediatr.(Rio de J.). 1997; 73(6) : 395-400.p Abstract: Introdução gastroenterite causada pela Shigella sp (shigelose) representa importante causa de morbimortalidade, especialmente em crianças abaixo de 2 anos de idade. Sabe-se que o tratamento antimicrobiano adequado pode melhorar o quadro clínico e diminuir a disseminação da doença. Têm sido descritos níveis crescentes de resistência aos antimicrobianos comu-

mente usados para o tratamento, e a sensibilidade da Shigella não foi recentemente avaliada em nosso meio. Objetivo: avaliar a resitência antimicrobiana das espécies de Shigella em nosso meio. Método: Delineou-se um estudo retrospectivo, utilizando-se 106 coproculturas de pacientes, hospitalizados ou não, que tenham procurado atendimento no HCPA ou no HPV durante o período de 1994 a 1996 com diagnóstico de shigelose firmado por coprocultura...(AU);.

Santos Filho L. et al. *Analysis of the clonal diversity of Staphylococcus aureus methicillinàresistant strains isolated at João Pessoa, state of Paraíba, Brazil.* Mem. Inst. Oswaldo Cruz. 1996; 91(1) : 101-5.p Abstract: To investigate the clonal diversity of Staphylococcus aureus strains isolated at João Pessoa, state of Paraíba, Brazil, digested genomic DNA were studied by pulsedàfield gel electrophoresis (PFGE) in nine methicillinàresistant strains (MRSA) and three methicillinàsensitive strains (MSSA), selected among 67 isolates based on their antimicrobial susceptibility and epidemiology. The isolates were obtained between April and November 1992 from the Hospital of the Federal University of Paraíba, located in João Pessoa. Two MRSA isolates from the Oswaldo Cruz Hospital, São Paulo, Brazil, including an epidemic strain previously detected from different hospitals at the country were used as control. Five different patterns, were demonstrated by MRSA isolated in João Pessoa and these patterns were described in several epidemiologically unrelated hospitals in São Paulo. Our results suggest the interstate dissemination of a MRSA clone in João Pessoa which is similar to that described in other cities of Brazil. (AU).

Santos K.R. et al. *Incidence surveillance of wound infection in hernia surgery during hospitalization and after discharge in a university hospital.* J Hosp Infect. 1997; 36(3) : 229-33.p Abstract: A six-month prospective incidence surveillance of wound infection was conducted in the department of general surgery of the Rio de Janeiro University Hospital. Postoperative infections were classified according to Centers for Disease Control criteria. This study reports a rate of 14.04% in surgical infections limited to herniorrhaphy and detected by surveillance. The majority (87.50%) of them were only apparent after hospital discharge. Fourteen out of 16 patients (88.60%) were not deemed to be at risk for surgical infections. Staphylococcus aureus was the most important pathogen associated with infection. This report shows that community surveillance is necessary to determine accurate rates of hospital-acquired infection and will help establish prevention and control policies in Brazil.

Santos K.R. et al. *DNA typing of methicillin-resistant Staphylococcus aureus: isolates and factors associated with nosocomial acquisition in two Brazilian university hospitals.* J Med Microbiol. 1999; 48(1) : 17-23.p Abstract: Control and prevention of methicillin-resistant Staphylococcus aureus (MRSA) infections should include early identification of patients at higher risk of MRSA acquisition and analysis of isolates by discriminatory bacterial DNA typing methods. One hundred and three MRSA isolates cultured between Sept. 1994 and Sept. 1995 from 62 patients in two teaching hospitals (hospital 1, in Rio de Janeiro; hospital 2, in Minas Gerais) were tested for antimicrobial resistance and genomic DNA was analysed by pulsed-field gel electrophoresis (PFGE). Ten profiles were identified: A, B, C, I and J in hospital 1 and A, B, D, E, F, G and H in hospital 2. PFGE patterns A and B were isolated at both hospitals. The majority (80%) of isolates had similar PFGE patterns (type A). Subtype A1 was isolated at both hospitals, but was more frequent in hospital 2 (54%), while subtype A2 predominated in hospital 1 (63%). MRSA isolates were resistant to the majority of antimicrobial agents tested. However, susceptibility to vancomycin alone was found in 32% of the isolates at hospital 1, whereas 48% of isolates from hospital 2 were susceptible to both vancomycin and mupirocin, and 34% demonstrated susceptibility to vancomycin, mupirocin and chloramphenicol. Thirty-nine percent of all isolates were mupirocin-resistant, with 90% of these belonging to PFGE pattern A. Four main risk factors were associated with MRSA infection or colonisation which may be useful in the early identification of patients at risk: >7 days hospitalisation (95%), very dependent patients (84%), invasive procedures (79%) and recent antimicrobial therapy (79%). The data demonstrate that PFGE pattern A is disseminated in both hospitals. However, at both hospitals subtypes of pattern A and the other PFGE types were associated with different antibiotic resistance patterns.

Santos M.H. *Amino acid decarboxylase capability of microorganisms isolated in Spanish fermented meat products.* Int J Food Microbiol. 1998; 39(3) : 227-30.p Abstract: Enterobacteria, lactic acid bacteria (LAB) and Gram-positive cocci were isolated from Spanish meat products. The most frequent species in the meat products studied were identified as Lactobacillus sake, Lactobacillus plantarum and Lactobacillus curvatus from De Man-Rogosa-Sharpe agar; Staphylococcus xylosus, Staphylococcus saprophyticus and Micrococcus varians from mannitol salt phenol-red agar; and Hafnia alvei, Escherichia coli, Pseudomonas fluorescens, Enterobacter amnigenes and Enterobacter aerogenes from violet red bile dextrose agar. The amino acid decarboxylase activity of the microorganisms isolated was assayed. Enterobacteria had higher amino acid decarboxylase activity than the other groups. LAB did not show any significant amino acid decarboxylase capability in this study.

Sanz M.A. et al. *Cutaneous promyelocytic sarcoma at sites of vascular access and marrow aspiration. A characteristic localization of chloromas in acute promyelocytic leukemia?* Haematologica. 2000; 85(7) : 758-62.p Abstract: Extramedullary disease (EMD) is a rare clinical event in acute promyelocytic leukemia (APL). Although the skin is involved in half of the reported EMD cases, the occurrence of cutaneous promyelocytic sarcoma (PS) has been described very rarely. We report here three cases of PS which have the peculiarity of appearing at sites of punctures for arterial and venous blood and marrow samples (sternal manubrium, antecubital fossa, wrist over the radial artery pulse, catheter insertion scar). At presentation, all patients had hyperleukocytosis and a morphologic diagnosis of microgranular acute promyelocytic leukemia variant confirmed at the genetic level by demonstration of the specific chromosomal translocation t(15;17). A BCR3 type PML/RARa transcript was documented in the two patients for whom diagnostic RT-PCR was available. Patients had morphologic bone marrow remission at the time the PS appeared. A predilection for the development of cutaneous PS at sites of previous vascular damage has been noted, but the pathogenesis remains largely unknown. A potential role for all-trans retinoic acid has been advocated, although one of the three patients in our series had received no ATRA. A review of the literature revealed six similar cases and hyperleukocytosis at diagnosis was a consistent finding in all of them. A careful physical examination of these particular sites in the follow-up of patients at risk, as well as cutaneous biopsy and laboratory examination of suspected lesions are strongly recommended.

Saraiva I.H. et al. *Avaliação da sensibilidade a antimicrobianos de 87 amostras clínicas de enterococos resistentes à vancomicina.* Rev. Assoc. Med. Bras (1992). 1997; 43(3) : 217-22.p Abstract: OBEJETIVOS. 1) Avaliar o padrão de sensibilidade in vitro de amostras clínicas de enterococos resitentes à vancomicina (ERV), aos antimicrobianos comumente utilizados no seu tratamento, bem como a antimicrobianos alternativos. 2) Avaliar a acurácia do E test, em comparação aos outros testes de sensibilidade a antimicrobianos (microdiluição em caldo e difusão em disco). MATERIAL E MÉTODOS. Foram analisadas 87 amostras clínicas de ERVs selecionadas de 1.936 isolados de enterococos coletados em 97 hospitais norte-americanos, no último trimestre de 1992. A identificação em nível de espécie foi feita pelos sistemas API 20S, Vitek e uma versão modificada do método convencional proposto por Facklam e Collins. A avaliação da sensibilidade in vitro aos antimicrobianos foi realizada pela técnica de microdiluição em caldo, E test e métodos de difusão em disco. As amostras foram testadas, tanto para antimicrobianos normalmente

utilizados no tratamento de infecções enterocócicas (vancomicina, teicoplanina, ampicilina, penicilina, gentamicina e estreptomicina), como também para drogas alternativas potencialmente teis (cloranfenicol, doxiciclina, esparfloxacina, ciprofloxacina, clinafloxacina, eritromicina, espectinomicina, trospectomicina, trimetoprim-sulfametoxazol e novobiocina). RESULTADOS. A avaliação dos testes de sensibilidade das 87 amostras de ERV revelou resistˆncia, a ampicilina em torno de 86 por cento, o mesmo sendo observado para penicilina. Em relação aos aminoglicosídeos, obtivemos alto grau de resistˆncia, em torno de 82 por cento e 85 por cento, para gentamicina e estreptomicina, respectivamente. Apesar de pertencer à mesma classe de vancomicina, a teicoplanina foi ativa contra 29 por cento das amostras de ERV. Entre os antimicrobianos alternativos testados, os que apresentaram maiores taxas de sensibilidade foram o cloranfenicol, a doxiciclina e a trospectomicina (82 por cento, 92 por cento e 94 por cento de isolados suscetíveis, respectivamente). CONCLUSÇO. O tratamento de infecções causadas por enterococos multirresistentes ainda é um desafio, e vários esquemas já vˆm sendo propostos na literatura. São necessários, no entanto, mais trabalhos analisando a efetividade clínica dessas combinações de antibióticos antes que recomendações definitivas possam ser feitas. (AU).

Sato K. et al. *[In vitro antimicrobial activities of quinolones, rifamycins and macrolides against Mycobacterium tuberculosis and M.avium complex: attempt to establish new assay methods which accurately reflect therapeutic effects of test agents in vivo].* Kekkaku. 1999; 74(1) : 63-70.p Abstract: Profiles of expression of the antimicrobial activities of LVFX, KRM-1648 (KRM), and CAM against M. tuberculosis (MTB) and M. avium complex (MAC) residing in MONO-MAC-6 human macrophage like cells (MM6-M phi s) and A-549 human type II alveolar pneumocyte cells (A-549 cells) were determined. First, the antimicrobial activities of LVFX, KRM, and CAM against intracellular organisms of MTB Kurono and MAC N-444 strains were examined under conditions in which infected MM6-M phi s and A-549 cells were cultured for up to 7 days or longer in medium containing the antimicrobials at their Cmaxs in the blood, achievable after oral administration of clinical dosages of these drugs. The antimicrobial effects of LVFX and KRM against respectively MTB and MAC within A-549 cells were significantly less than the activities they displayed against the same organisms residing in MM6-M phi s. Notably, it was also found that KRM had a markedly larger MIC (0.25 microgram/ml) for MAC N-444 within A-549 cells than its MIC (0.008 microgram/ml) for the same strain residing in MM6-M phi s. Thus, the profiles of LVFX- and KRM-mediated killing or inhibition of intracellular MTB or MAC organisms in A-549 cells were markedly different from those observed for the organisms residing in MM6-M phi s. Second, invasive and multiplicative phenotypes of MTB and MAC organisms, which had been adapted to either an extracellular or intracellular environment (designated as E- and I-type organisms, respectively), were studied. In the case of MTB, I-type organisms (retrieved from infected MM6-M phi s after bacterial growth within the M phi s during 5-day cultivation) were less efficient than E-type organisms (prepared by cultivating the organisms in 7H9 medium) in entering MM6-M phi s, whereas I-type organisms were more efficient than E-type organisms in invading A-549 cells. On the other hand, in the case of MAC, infectivity of I-type organisms not only in MM6-M phi s but also in A-549 cells was larger than that of E-type organisms. Next, while I-type organisms of MTB and MAC displayed more vigorous replication within MM6-M phi s than E-type organisms, the growth rate of E-type organisms within A-549 cells was more rapid than that of I-type organisms residing in A-549 cells. These findings indicate that there are significant differences between E- and I-type organisms of MTB or MAC in ability to invade and multiply within M phi s (professional phagocytes) and alveolar epithelial cells (nonprofessional phagocytic cells).

Sato K. et al. *[In vitro activities of benzoxazinorifamycin KRM-1648 against Mycobacterium tuberculosis].* Kekkaku. 1996; 71(8) : 459-64.p Abstract: In vitro antimicrobial activities of the benzoxazinorifamycin derivative KRM-1648 (KRM) against 50 strains of Mycobacterium tuberculosis isolated from patients with mainly intractable pulmonary tuberculosis were studied. MIC90 values of KRM, rifabutin (RBT) and rifampicin (RFP) for RFP-sensitive strains (27 strains; defined as those with MICRFP values of < 1.56 micrograms/ml) were 0.013, 0.1 and 0.4 micrograms/ml, respectively, when determined by the agar dilution method using 7H11 medium. MIC90 values of KRM, RBT, and RFP for RFP-resistant strains (23 strains; defined as those having MICRFP values of > or = 1.56 micrograms/ml) were 100, 12.5 and > 100 micrograms/ml, respectively. MICs of KRM against 50 clinical isolates of M. tuberculosis distributed over a much lower range than those of RFP. KRM showed more potent antimicrobial activity than RBT against the organisms with low MIC values (< or = 1.56 micrograms/ml), while it was not so active as RBT against the organisms with high MIC values (> or = 3.13 micrograms/ml). Cross-resistance between KRM and RFP or RBT was observed for M. tuberculosis.

Sato T. et al. *[Study on septicaemia in infants and children in the past 20 years. Part 2. An analysis of factors that prescribe for the prognosis].* Kansenshogaku Zasshi. 1996; 70(8) : 784-91.p Abstract: Underlying diseases, complications, clinical findings, and laboratory findings were evaluated in 158 cases of septicaemia admitted to Jikei University Hospital from 1975 to 1994, in order to conjectured factors that prescribe for the prognosis. 50% of the patients had underlying diseases. Malignancy including leukaemia (31 cases, 39.2%) was the most common underlying disease, followed by low birth weight infant (17 cases, 21.5%), aplastic anemia (9 case, 11.4%), and congenital heart disease (7 cases, 8.9%). The death rate for patients with underlying disease (27.8%) was significantly greater than the mortality for normal patients with septicaemia (8.9%) ($p < 0.05$). Meningitis (24.7%) was the most common complication, followed by DIC (19.6%), shock (15.2%), and pneumonia (10.8%). The mortality rate of septicaemia complicated by shock was 66.7% ($p < 0.01$), and that complicated by DIC was 45.2% ($p < 0.01$). The mortality rate for patients with the clinical findings of respiratory distress, cough, abdominal distention, cyanosis, splenomegaly, or peripheral coldness was more than 40% and significantly greater ($p < 0.01$). Mortality rate in patients with granulocyte counts of < 4.000/mm3, platelet counts of < 5 x 10(4)/ mm3, total protein of < 5.0 g/dl, or ESR of < 20 mm/hr were significantly greater ($p < 0.01$) than those in patients with normal laboratory findings. Coincidence rate of blood and stool cultures was 57.9% for E. coli, and 28.6% for Klebsiella sp., and that of blood and throat cultures was more than 30% for Pseudomonas sp., Haemophilus influenzae, and Staphylococcus aureus. In the study of antimicrobial susceptibility for microorganisms isolated, the number of drug resistant S. aureus had increased in the last 10 years.

Saurina G. et al. *Antimicrobial resistance in Enterobacteriaceae in Brooklyn, NY: epidemiology and relation to antibiotic usage patterns.* J Antimicrob Chemother. 2000; 45(6) : 895-8.p Abstract: In November 1997, all Enterobacteriaceae isolated at 15 hospitals in Brooklyn were collected. Extended-spectrum beta-lactamases (ESBLs) were present in 44% of 409 Klebsiella pneumoniae isolates. Six isolates had reduced susceptibility to carbapenems, including two that were not susceptible to any of the antibiotics tested. Pulsed field gel electrophoresis revealed a commonality of resistant isolates within and between hospitals. The occurrence of ESBLcontaining isolates was associated with cephalosporin usage (P = 0.055). ESBLs were present in 4.7% of Escherichia coli and 9.5% of Proteus mirabilis isolates. It is concluded that ESBL-producing Enterobacteriaceae are endemic in Brooklyn, are spread between hospitals, and may be associated with cephalosporin usage.

Savitskaia K.I. et al. *[Use of microtest systems for identification of newly isolated clinical strains].* Klin Lab Diagn. 1996; (5) : 29-35.p Abstract: Species appurtenance of 425 clinical strains isolated from various types of material from December 1993 to November 1994 was

identified using Lachema (Czechia) Micro-la-test. There were 99 staphylococcal, 139 streptococcal, 119 enterobacterial cultures, and 68 nonfermenting gram-negative bacteria. The microorganisms were characterized completely according to their code in 67.7% cases (STAPHYtest), 54% (STREPTOtest), 25.2% (ENTEROtest), and 22.1% (NEFERMtest). False-positive reactions in the control were detected in 22.2% (STAPHYtest), 33.3% (STREPTOtest), 11.8% (ENTEROtest), and 41.7% (NEFERMtest) of the number of biochemical characteristics in a plaque. Unclear reactions (+/-) making identification difficult were observed in 100% cases for STAPHYtest, 83.3% for STREPTOtest, 91.7% for ENTEROtest-1, and 58.3% for NEFERMtest. Atypical reactions, not corresponding to the studied species, were observed in 62.5% cases with STAPHYtest, 41.7% with STREPTOtest, 66.7% with ENTEROtest-1, and 58.3% with NEFERMtest. Still, STREPTOtest with the probability of verifying 61.5 to 87.5% of the cultures may be used for identifying the species appurtenance of alpha-hemolytic streptococci.

Savitskaia K.I. et al. *[A method of sequential (intravenous and oral) use of ofloxacin in the treatment of patients with infections of organs of the peritoneal cavity].* Antibiot Khimioter. 1996; 41(9) : 60-7.p Abstract: Clinico-laboratory estimation of the efficacy and tolerance of ofloxacin used in succession, at first intravenously and then orally, in the treatment of 15 patients with infection of the abdominal cavity was performed. It was shown that after the use for a period of 10 years ofloxacin preserved its high antimicrobial activity against gram-positive and gram-negative organisms with multiple drug resistance and remained superior to the majority of broad spectrum antimicrobial agents by the number of susceptible isolates. The successive use of ofloxacin proved to be highly efficient. The total efficacy of the drug amounted to 80 percent and no side effects were recorded. The analysis of the microbiological state of the antiinfectious resistance system (AIRS) showed that the dysbiotic lesions on the mucosa of the upper respiratory tracts and large intestine detected in all the patients before the treatment with ofloxacin remained after the treatment. However, a change in the microflora responsible for dysbacteriosis was observed. The investigation of the immunological status of the AIRS suggested that the good and satisfactory results of the therapy with ofloxacin could to a significant extent be due to the proportion of the active neutrophils.

Savoia D. et al. *A one-year survey of respiratory and urinary pathogens and their antimicrobial susceptibility.* New Microbiol. 1996; 19(1) : 59-66.p Abstract: A one-year (1993) survey of the distribution of pathogens causing respiratory and urinary infections and their antimicrobial susceptibility was performed. The most common bacteria isolated from the lower respiratory tract of patients in a district general hospital were Pseudomonas aeruginosa (35.9%) and Staphylococcus aureus (21.4%). About half of the Pseudomonas strains revealed a resistance to imipenem and gentamicin, whereas almost all Staphylococcus strains were resistant to penicillin G. The most common isolates from urine of in and out-patients were Escherichia coli (32.3% and 39.8%) and Enterococcus faecalis (16.6% and 14.2%). Escherichia coli strains were largely susceptible to almost all chemoantibiotics tested, whereas Enterococcus faecalis demonstrated a high resistance pattern. Pseudomonas aeruginosa isolated from urine were more sensitive to chemoantibiotics than respiratory strains and the susceptibility of Staphylococcus aureus isolated from hospitalized or out-patients was different. A periodic monitoring system devised to give information about the circulation of bacteria and the chemoantibiotic resistance in a local context would be useful to assess the local trends and select drugs for therapy.

Sawicka-Grzelak A. et al. *[Drug resistance of 100 clinical strains of Enterococcus spp].* Med Dosw Mikrobiol. 1999; 51(3-4) : 239-47.p Abstract: The aim of this study was to evaluate the drug susceptibility of 100 Enterococcus spp. strains isolated from patients hospitalized in State Clinical Hospital No 1 in Warsaw. All strains were identified (API 20 STREP) and their susceptibility to antibiotics was tested (ATB STREP) in automatic ATB system. Additionally, PYRase activity, beta-lactamase production (in nitrocefin test), MICs for vancomycin and teicoplanin (E test), HLAR—high level aminoglycoside resistance and susceptibility to vancomycin, teicoplanin, piperacillin and piperacillin/tazobactam (disc diffusion method) were determined. E. faecalis ATCC 29212 was used as the control strain. Fifty E. faecalis, 45 E. faecium, 2 E. casseliflavus, 2 E. durans and 1 E. avium strain were cultured. All strains were PYRase-positive and beta-lactamase-negative. Ten isolates demonstrated intermediate susceptibility to vancomycin (6—E. faecalis and 4—E. faecium). One E. faecalis strain was intermediately susceptible to both glycopeptides. One E. casseliflavus strain showed low-level resistance to vancomycin, but this strain was susceptible to teicoplanin—phenotype Van C. HLAR strains were found among 31 E. faecalis and 40 E. faecium strains. 48 E. faecalis strains were susceptible to piperacillin and 49 to piperacillin/tazobactam. Whereas, 41 E. faecium were resistant to both these drugs. Thirty six per cent of isolates were resistant to penicillin and ampicillin, 73% to erythromycin, 87% to tetracycline, 89% to lincomycin and 56% to nitrofurantoin. Some discrepancies were noticed between the results of different methods applied for susceptibility testing—ATB system, E test and disc diffusion. These discrepancies concerned HLAR detection and susceptibility to glycopeptides determination. The best methods were: disc-diffusion for HLAR detection and E test for determination of resistance to vancomycin and teicoplanin. Increasing resistance to antimicrobial agents is observed in clinical Enterococcus spp. isolates cultured in our laboratory, especially in E. faecium strains. It is necessary to control the dissemination of multiresistant Enterococcus spp. strains in hospital wards.

Sawicka-Grzelak A. et al. *[Drug resistance in nosocomial strains of staphylococci to methicillin].* Med Dosw Mikrobiol. 1998; 50(1-2) : 1-7.p Abstract: The aim of the present study was the analysis of drug susceptibility of MRSA and MRCNS strains isolated from patients hospitalized in 14 wards of the State Clinical Hospital No 1 in Warsaw. The strains were identified (ID 32 STAPH), and their susceptibility to antimicrobial agents (ATB STAPH) was determined in ATB system (bioMerieux, France). Four methods were applied to confirm the resistance to methicillin: ATB-plus system, disc-diffusion method (Oxa 1 microgram, Oxoid, U.K.), Crystal MRSA ID (Becton Dickinson-BBL, USA) and agar screen test in TSA medium (Difco, USA) with methicillin (25 mg/l, Sigma, USA). 108 Staphylococcus spp. strains were found in 300 clinical specimens. 56 strains were methicillin-resistant (52%). Among methicillin-resistant strains 13 MRSA, 28 MRSE and 15 of other species were found. All MRSA strains were susceptible to vancomycin, teicoplanin and fusidic acid. MRCNS were susceptible first of all to vancomycin (43/43), minocycline (42/43) and pristinamycin (42/43). On the basis of the obtained results it can be stated that methicillin-resistant staphylococci occur in hospital wards. The greatest number of methicillin-resistant strains was cultured from patients hospitalized in surgery wards (32), methicillin-resistant strains much more frequently occur among coagulase-negative staphylococci, especially in Staphylococcus epidermis. Glycopeptide antibiotics are most active against isolated MRSA strains. The most active therapeutic agent against MRCNS is vancomycin.

Scaglione F. et al. *Comparative activities of pefloxacin and ciprofloxacin in the treatment of chronic respiratory tract infections.* J Chemother. 1995; 7(2) : 140-5.p Abstract: To determine the efficacy in vivo of pefloxacin and ciprofloxacin in the treatment of acute infectious bronchopneumopathies, 90 patients, suffering from acute exacerbation of chronic bronchitis and with no known allergies to quinolones, were admitted to the study. Patients were randomly divided into three groups of 30; the first group was dosed with pefloxacin 800 mg i.v. every 24 hours; the second group with pefloxacin 800 mg per os every 24 hours and the third with 500 mg per os of ciprofloxacin every 12 hours. Blood and bronchial secretion samples were simultaneously collected 2, 4, 8, 12, 14 and 24 hours after the first daily dose of

antibiotic. Serum and bronchial secretion concentrations of pefloxacin and ciprofloxacin were determined by using a microbiological agar disk diffusion assay, employing Escherichia coli Kp 712 as test organism. Eradication of responsible microorganisms (Staphylococcus aureus, Haemophilus influenzae, Moraxella catarrhalis) were achieved in 98% of patients around 72 hours post treatment. Generally, both antibiotics expressed similar bactericidal properties when orally administered, while intravenous administration of pefloxacin displays a more rapid antibacterial action in comparison with the oral administration schedules. Maximal concentrations of both drugs in bronchial secretion were recorded at the same time after treatment (4 hours), with concentrations of about 2.5 micrograms/ml. Pefloxacin, having a longer half-life, was found 24 hours post-treatment with plasma concentrations of 1.5 micrograms/ml following a single oral dose of 800 mg. Ciprofloxacin, having a shorter half-life, showed a peak of about 1 microgram/ml, 12 hours after administration (500 mg/12 hours/os).

Schaad U.B. *[Aminoglycosides in pediatrics].* Schweiz Med Wochenschr Suppl. 1996; 76 : 34S-38S.p Abstract: The aminoglycosides continue to be needed in hospital pediatrics. Their advantage is high predictability of both efficacy and toxicity. This review focuses on the background to the aminoglycosides and defines their present role in antibiotic therapy of pediatric patients. Both the beneficial and unfavourable characteristics of these antimicrobial agents are discussed. The clinical uses of aminoglycoside antibiotics and their possible modes of administration are also commented on. The author attempts to compare the currently available aminoglycosides gentamicin, tobramycin, amikacin and netilmicin in the light of their antibacterial activity in vitro, their clinical efficacy, and their ototoxic and nephrotoxic potential. For the future it is important not to lose sight of these backup drugs where appropriately and safely used. A possible renaissance of the aminoglycosides would require either a molecular miracle (new aminoglycosides with decreased toxicity and an increased spectrum of activity) or a bacterial revolt (rapid emergence of resistance of many gram-negative enteric bacilli to other antibiotic classes).

Schaad U.B. *[Childhood meningitis].* Ther Umsch. 1999; 56(11) : 653-8.p Abstract: Early and reliable diagnosis, prompt and adequate treatment, and intensive monitoring are the mainstays for normal outcome of patients with meningitis. Major progress has been achieved during the last 5-10 years. The successful implementation of the active immunization against Haemophilus influenzae type b has dramatically changed the epidemiology of bacterial meningitis: total incidence has been cut in half and approximately half of the cases now occur in adults. Important new insights into the pathogenesis and the pathophysiology have been gained resulting in specific supportive and antiinflammatory measures. Emergence of antibiotic-resistance in meningitis pathogens have lead to modified antimicrobial therapies. Knowledge about factors associated with a poor prognosis is important in selecting patients for more intensive surveillance and treatment, and in identifying candidates for new preventive or therapeutic strategies.

Scharff R.P. et al. *Lymphocutaneous fistula as a long-term complication of multiple central venous catheter placement.* Tex Heart Inst J. 2000; 27(1) : 57-60.p Abstract: We report a case of a lymphocutaneous fistula in a 19-month-old boy who had been a premature neonate, born in the 23rd week of gestation. The fistula, an apparent complication of central venous line placement during the patient's first 5 months of life, was composed of a distinct lymphatic vessel bundle in the right supraclavicular region, with its exit point at the posterior aspect of the right shoulder. The drainage ceased immediately after resection and repair of a 1-cm obstruction in the superior vena cava.

Scheel O. et al. *National prevalence survey on hospital infections in Norway.* J Hosp Infect. 1999; 41(4) : 331-5.p Abstract: A nationwide prevalence survey was carried out in Norwegian hospitals (excluding mental hospitals) on 23 October 1997. The aim was to assess the magnitude of major hospital-acquired infections (HAIs) prior to the introduction of quarterly prevalence surveys in Norway as required by the new Regulations for Communicable Disease Control in Hospitals. The survey included 71 of 76 possible hospitals, and 12,775 patients. Altogether 779 HAIs were identified—a prevalence rate of 6.1%. Only the four major HAIs were included: urinary tract infection (36.4% of all HAIs); surgical wound infection (28.6%); lower respiratory tract infection (25.4%) and septicaemia (9.6%). Three thousand, three hundred and forty-nine patients had undergone surgery and the prevalence of surgical wound infection was 6.3%. The results form a baseline for the next step in Norweigan hospital infection control; the quarterly prevalence surveys.

Scheinert D. et al. *[Percutaneous therapy of catheter-induced traumatic vascular lesions with Dacron coated nitinol stents].* Zentralbl Chir. 2000; 125(1) : 27-33.p Abstract: OBJECTIVE: Percutaneous peripheral interventional procedures as well as coronary interventions can be complicated by dissections and traumatic lesions of peripheral arteries. The aim of this study was to evaluate the efficacy of fabric covered endoprostheses for percutaneous repair of traumatic peripheral arterial lesions. PATIENTS AND METHODS: In this study we used the EndoPro 1/Passager device (Boston Scientific, USA), which is a self-expanding nitinol stent covered by an ultrathin layer of dacron fabric. In 27 patients a total number of 31 endoprostheses (mean length 7.3 cm) were implanted in iliac (n = 20), femoral (n = 6) and popliteal arteries (n = 1). Indications for stenting were large dissections (n = 24), arterial perforations (n = 2) and one traumatic arterio-venous fistula. RESULTS: An immediate exclusion of the lesion could be achieved in all cases. There were no major procedural complications. However, within 24 hours after implantation 14 patients (51.9%) developed fever. WBC and CRP were elevated in 13 (48.1%) and 17 (63%) patients, respectively. Repeated blood cultures could not show any bacterial growth. The primary patency after a mean follow-up of 19 (5 to 31) months was 85.2%. In two cases with markedly impaired peripheral run-off subacute graft occlusions occurred. In 2 other cases the angiography revealed relevant restenoses (> 75%). The patency could be restored in 2 of these 4 cases leading to a secondary patency rate of 92.6%. CONCLUSIONS: The EndoPro 1/Passager endoprosthesis seems to be safe and effective to seal large dissections and traumatic lesions of peripheral arteries, showing a high long-term patency rate.

Schenk P. et al. *Recombinant tissue plasminogen activator is a useful alternative to heparin in priming quinton permcath.* Am J Kidney Dis. 2000; 35(1) : 130-6.p Abstract: Soft, cuffed, implantable central venous catheters such as the Quinton Permcath (Quinton Instrument Co, Seattle, WA) are increasingly used as permanent access in patients with end-stage renal disease. Their major limitations, besides infection, are thrombosis and inadequate blood flow. To prevent those complications, heparin is conventionally used for priming the Quinton Permcath between dialysis sessions. In this study, we compared recombinant tissue plasminogen activator (rTPA) with heparin for priming the Quinton Permcath in a prospective, randomized, crossover design. Twelve patients were randomly assigned to receive 2,000 IU of heparin or 2 mg of rTPA injected into each catheter lumen at the end of each dialysis session over a period of 4 months, followed by a switch to the other substance. Blood flow rate (flow), venous pressure (VP), and arterial pressure (AP) were monitored at each dialysis session hourly. Flow was significantly greater (P = 0.0001) with rTPA (mean +/- SD, 237.7 +/- 18.1 and 231.6 +/- 12.4 mL/min for the first and second 2 months, respectively) compared with heparin (208.5 +/- 10.1 and 206.9 +/- 14.2 mL/min for the first and second 2 months, respectively). VP was significantly less (P = 0.0001) with rTPA (135.4 +/- 8.2 and 140 +/- 15.2 mm Hg for the first and second 2 months, respectively) compared with heparin (160.5 +/- 16.1 and 159.2 +/- 20.7 mm Hg for the first and second 2 months, respectively). AP was significantly greater (P = 0.0002) with rTPA (-113.5 +/- 11.8 and -115.9 +/- 12.7 mm Hg

for the first and second 2 months, respectively) compared with heparin (-136.5 +/- 23.3 and -134.7 +/- 25.8 mm Hg for the first and second 2 months, respectively). In addition, fewer complications (flow problems, clotting, and need for fibrinolysis) occurred in the rTPA period. These results show that rTPA is superior to heparin for priming the Quinton Permcath between hemodialysis sessions and can be used as a valuable alternative to conventional heparin in selected patients.

Schenkels L.C. et al. *In vivo binding of the salivary glycoprotein EP-GP (identical to GCDFP-15) to oral and non-oral bacteria detection and identification of EP-GP binding species.* Biol Chem. 1997; 378(2) : 83-8.p Abstract: Extra Parotid Glycoprotein (EP-GP) is a glycoprotein isolated from human saliva, having homologues in several other body fluids. The biological role of EP-GP and its homologues is unknown. Recently, EP-GP was shown to bind in vitro to the bacterium Streptococcus salivarius HB. In contrast, no binding to a number of other oral microorganisms could be demonstrated. In the present study we have determined whether binding of EP-GP to bacteria occurs in vivo in saliva and in other EP-GP containing body fluids. Therefore the presence of EP-GP on bacteria in vivo was determined by analyzing oral, skin and ear floras by confocal fluoresence microscopy using specific antibodies. About 12% of the in vivo oral flora had EP-GP present on their surface, while approximately 5% of the bacteria from ear canal or skin was positive for EP-GP. IgA was detected on approximately 65% of the salivary bacteria, whereas the high-molecular weight mucin (MG1) and cystatin C were not detectable on any oral bacterium. Using a replica-plate assay, a number of EP-GP binding strains in saliva were isolated and identified as Gemella haemolysans, Gemella morbillorium, Streptococcus acidominimus, Streptococcus oralis, Streptococcus salivarius and Streptococcus parasanguis. Bacteria from the ear canal and skin bacteria were identified as Staphylococcus hominis. It is concluded that EP-GP is selectively bound in vivo to several oral and non-oral bacterial species.

Schentag J.J. *Antimicrobial action and pharmacokinetics/pharmacodynamics: the use of AUIC to improve efficacy and avoid resistance.* J Chemother. 1999; 11(6) : 426-39.p Abstract: In in-vitro and in animal models, antibiotics show good relationships between concentration and response, when response is quantified as the rate of bacterial eradication. The strength of these in-vitro relationships promises their utility for dosage regimen design and predictable cure of human infections. Resistance is also predictable from these parameters, fostering a rational means of using dosing adjustments to avoid or minimize the development of resistant organisms. Newly developed computerized methods for the quantitation of susceptibility allow testing of integrated kinetic-susceptibility models in patients. Our attention has focused recently on fluoroquinolones, since they are relatively nontoxic and provide the necessary range of dosage needed to elucidate correlations between concentration and response in the Intensive Care Unit patient. Studies conducted in patients with nosocomial gram-negative pneumonia reveal good correlations between bacterial eradication and integration of concentration with bacterial susceptibility. In patients, the best correlation parameters are time over MIC, and the ratio of 24-hour AUC to MIC (AUIC). Patients with serious infections like nosocomial pneumonia require bactericidal antimicrobial activity. Studies in our laboratory demonstrate that the minimum effective antimicrobial action is an area under the inhibitory titer (AUIC) of 125, where AUIC is calculated as the 24-hour serum AUC divided by the MIC of the pathogen. This target AUIC may be achieved with either a single antibiotic or it can be the sum of AUIC values of two or more antibiotics. There is considerable variability in the actual AUIC value for patients when antibiotics are given in their usually recommended dosages. Examples of this variance will be provided using aminoglycosides, fluoroquinolones, beta-lactams, macrolides and vancomycin. The achievement of minimally effective antibiotic action, consisting of an AUIC of at least 125, is associated with bacterial eradication in about 7 days for beta-lactams and quinolones. When AUIC is increased to 250, the quinolone ciprofloxacin (which displays in vivo concentration dependent bacterial killing) can eliminate the bacterial pathogen in 1-2 days. Beta lactams, even when dosed to an AUIC of 250, often require longer treatment duration to eliminate the bacterial pathogen, because the in vivo bacterial killing rate is slower with beta-lactams than with the quinolones. This remains true even at AUIC values of 250 for both compounds, which is theoretically identical dosing. Antibiotic activity indices allow clinicians to evaluate individualized patient regimens. Furthermore, antibiotic activity is a predictable clinical endpoint with predictable clinical outcome. This value is also highly predictive of the development of bacterial resistance. Antimicrobial regimens that do not achieve an AUIC of at least 125 cannot prevent the selective pressure that leads to overgrowth of resistant bacterial sub-populations. Indeed, there is considerable anxiety that conventional respiratory tract infection management strategies, which prescribe antibacterial dosages that may attain AUIC values below 125, are contributing to the pandemic rise in bacterial resistance levels.

Schentag J.J. *Sparfloxacin: a review.* Clin Ther. 2000; 22(4) : 372-87; discussion 371.p Abstract: BACKGROUND: The continuing increase in the rate of penicillin and cephalosporin resistance among respiratory pathogens and of cross-resistance to macrolide antibiotics has led to the recommendation that fluoroquinolone antibiotics be used to treat high-risk patients with community-acquired pneumonia (CAP) and acute bacterial exacerbations of chronic bronchitis (ABECB). OBJECTIVE: This review focuses on sparfloxacin, an oral fluoroquinolone, discussing its mechanism of action, activity, pharmacokinetic characteristics, safety, and efficacy in CAP and ABECB. METHODS: Studies were identified by a MEDLINE search of the literature from 1990 to 1999, supplemented by educational materials from conferences and symposia. RESULTS: Sparfloxacin is active against the major respiratory pathogens and against the atypical pathogens in pneumonia that are being reported with increasing frequency. Its long half-life permits once-daily dosing. In large trials in CAP and ABECB in which all isolates were susceptible to both comparators, sparfloxacin was found to have similar efficacy to erythromycin, cefaclor, amoxicillin, ofloxacin, and clarithromycin. Its safety profile is similar to that of the macrolides and other quinolone antimicrobial agents. Photosensitivity, nausea, and diarrhea are the most common adverse events reported in clinical trials of sparfloxacin. Its use is contraindicated in patients with QTc-interval prolongation. CONCLUSION: The increasing prevalence of beta-lactam- and macrolide-resistant bacteria in respiratory infections emphasizes the need for newer agents such as the fluoroquinolones. The choice between agents should be based on activity against the relevant respiratory pathogens in high-risk patients.

Schierholz J.M. et al. *Measurement of ultrasonic-induced chlorhexidine liberation: correlation of the activity of chlorhexidine-silver-sulfadiazine-impregnated catheters to agar roll technique and broth culture.* J Hosp Infect. 2000; 44(2) : 141-5.p Abstract: The diagnosis of intravascular catheter-related infections continues to be a challenge to both the clinician and the microbiologist. To assess the antiseptic effects of silver-sulfadiazine-chlorhexidine-impregnated central venous catheters (SSC) on catheter culture systems, segments of fresh antiseptic- and non antiseptic-impregnated catheters as well as extracted catheters following five days of immersion in PBS were sonicated. The chlorhexidine liberated from the catheter material by ultrasonication was measured by HPLC. Fresh antiseptic-impregnated catheter segments rolled on seeded agar plates produced inhibition zones unlike catheters which had been extracted for >five days in phosphate buffered saline (PBS). Scanning electron microscopy (SEM) revealed that chlorhexidine-silversulfadiazine crystals were located in the superficial catheter matrix. Direct contact of superficially located drug particles with seeded agar plates probably caused the inhibition of bacterial growth. The study suggests that antiseptic compounds readily elute from fresh catheters during solid medium-

based culturing processes and ultrasonication. The addition of inhibitors of silversulfadiazine-chlorhexidine to media may be prudent especially when culturing antimicrobial loaded catheters removed after short inwelling times. Copyright 2000 The Hospital Infection Society.

Schierholz J.M. et al. *Antimicrobial substances and effects on sessile bacteria.* Zentralbl Bakteriol. 1999; 289(2) : 165-77.p Abstract: Biofilms occur in natural aquatic ecosystems and on surfaces of biomaterials. They are generally associated with clinical infections predominantly of prosthetic hip joints, heart valves and catheters. Sessile microorganisms may be intimately associated with each other and to solid substratum through binding to and inclusion into exopolymer matrices on biofilms. The establishment of functional colonies within the exopolymeric matrices generate physico-chemical gradients within biofilms, that modify the metabolism and cell-wall properties of the microorganism. A consequence of biofilm growth is an enhanced microbial resistance to chemical antimicrobial agents and antibiotics. Investigations on the antimicrobial efficacy of antibiotics, antiseptics and antimicrobial heavy ions, however, gave controversial results. No single antimicrobial substance has been developed for the efficient eradication of adherent bacteria. This review elucidates the mechanisms of microbial resistance in biofilms and strategies for the prevention of biofilm development. Pharmacokinetical and pharmacodynamical issues for the screening of biofilm-active drugs are presented. Combinations of antistaphylococcal antibiotics with rifampin may be advantageous for preventing and curing biomaterial infections.

Schierholz J.M. et al. *"Difficult to treat infections" pharmacokinetic and pharmacodynamic factors—a review.* Acta Microbiol Immunol Hung. 2000; 47(1) : 1-8.p Abstract: "Difficult to cure infections" are characterized by poor penetration of antibiotics into infected vegetations, altered metabolic state of bacteria within the vegetation, absence of adequate host defense/cellular response. These infections typically include endocarditis, urinary tract infections (infected urinary tract stones), abscesses, infected fibrin clots (septic thromboemboli, haematomas, catheter-related infections) and foreign body infections. Four main aspects are discussed for the influence on human therapy: 1. the kinetics of antibiotic diffusion into vegetations 2. the specificity of some pharmacodynamic aspects and pharmacokinetic regimes 3. fibrin as one of the main constituents associated with infectious processes and 4. synergistical activities of antibiotic combinations on bacterial vegetations.

Schierholz J.M. et al. *Anti-infective catheters: novel strategies to prevent nosocomial infections in oncology.* Anticancer Res. 1998; 18(5B) : 3629-38.p Abstract: Intravenous access contributes significantly to the therapeutical success and to the comfort of oncologic patients. The highest risk for bloodstream infections, however, is vascular catheter-mediated. In oncology high mortality is associated with Pseudomonas aeruginosa, Candida albicans and Staphylococcus aureus sepsis. Besides established hygienic measures, the coupling or incorporation of antimicrobial substances to or into catheter materials may be a suitable way to prevent the development of catheter-associated infections. Here we present a risk- benefit evaluation of different models of antimicrobial catheter coated with silver, antiseptics or antibiotics. The controversial reports on clinical efficacy and the potential of adverse reactions due to silver and antiseptic coated catheters are discussed. The microbiological, pharmaceutical and physicochemical backgrounds of different types of coating are discussed in detail. Incorporation of antimicrobial agents into long-term silicon catheters providing a slow release of those substances through the external and internal surfaces of catheters may be the most effective technological innovation for reducing biomaterial-mediated nosocomial infections.

Schinsky M.F. et al. *Mycobacterium septicum sp. nov., a new rapidly growing species associated with catheter-related bacteraemia.* Int J Syst Evol Microbiol. 2000; 50 Pt 2 : 575-81.p Abstract: Rapidly growing mycobacteria are capable of causing several clinical diseases in both immunosuppressed and immunocompetent individuals. A previously unidentified, rapidly growing mycobacterium was determined to be the causative agent of central line sepsis in a child with underlying metastatic hepatoblastoma. Four isolates of this mycobacterium, three from blood and one from the central venous catheter tip, were studied. Phenotypic characterization, HPLC and genetic analysis revealed that while this organism most closely resembled members of the Mycobacterium fortuitum complex and Mycobacterium senegalense, it differed from all previously described species. Phenotypic tests useful in differentiating this species from similar rapidly growing mycobacteria included: growth at 42 degrees C, hydrolysis of acetamide, utilization of citrate, production of arylsulfatase (3-d), acidification of D-mannitol and i-myo-inositol, and susceptibility to erythromycin, vancomycin and tobramycin. The name Mycobacterium septicum is proposed for this new species. The type strain has been deposited in Deutsche Sammlung von Mikroorganismen und Zellkulturen as DSM 44393T and in the American Type Culture Collection as strain ATCC 700731T.

Schito G.C. et al. *A multinational European survey on the in-vitro activity of rufloxacin and other comparative antibiotics on respiratory and urinary bacterial pathogens.* J Antimicrob Chemother. 1996; 38(4) : 627-39.p Abstract: The antibacterial activity of rufloxacin was confirmed against a large number of respiratory and urinary tract pathogens collected in five European countries. In terms of both MIC90 values and percentages of susceptible isolates found, this new quinolone showed useful in-vitro activity against Mycoplasma catarrhalis, Haemophilus influenzae and Klebsiella pneumoniae, with a large proportion of Staphylococcus aureus also covered, while, as expected Streptococcus pneumoniae and Streptococcus pyogenes were not included in its antibacterial spectrum. Rufloxacin was comparable with the other antibiotics against these pathogens with the exception of streptococci. Against these microorganisms, beta-lactams were the most active agents. Against the urinary pathogens the in-vitro activity of rufloxacin is similar to that of norfloxacin although this latter drug is more active in terms of MIC90 values and in percentages of strains inhibited. In many cases more isolates were susceptible to the remaining comparator agents than to rufloxacin. However, there were no significant differences between the numbers of microorganisms inhibited by the various drugs and rufloxacin. The findings of this survey do not seem to modify the general picture which emerged in previous studies and further confirms its useful spectrum in different geographic settings.

Schito G.C. et al. *Susceptibility of respiratory strains of Staphylococcus aureus to fifteen antibiotics: results of a collaborative surveillance study (1992-1993). The Alexander Project Collaborative Group.* J Antimicrob Chemother. 1996; 38 Suppl A : 97-106.p Abstract: As part of the Alexander Project during 1992 and 1993, 690 Staphylococcus aureus strains isolated from community-acquired lower respiratory tract infections by clinical microbiology centres located in Europe and the USA were analysed by a co-ordinating laboratory that determined minimal inhibitory concentrations of 15 antimicrobial agents using a standardised microdilution technique. The prevalence of penicillin-susceptible microorganisms in this collection of pathogens was significantly higher in Europe (21.2%) than it was in the USA (12.1%). Most isolates (72.5%), however, were strains that had acquired the ability to synthesise a beta-lactamase but which were sensitive to methicillin. The incidence of methicillin-resistance (9.1% overall) was highly variable depending on geographic location and year of isolation. Analysis of MIC50, MIC90, MIC range and modal MIC of the 15 antibiotics assayed disclosed no major differences between the data sets obtained during the 2-year survey. Except for methicillin-resistant S. aureus, the activity of all the beta-lactams tested, with the exclusion of penicillin, amoxycillin and cefixime (that were completely inactive), was satisfactory. The effect of beta-lactamase synthesis was inhibited by the combination of amoxycillin with clavulanate, and by cefuroxime and ceftriaxone. Cefaclor was slight-

ly less effective. Erythromycin, clarithromycin and azithromycin showed identical cross-resistance rates (around 10%). Resistance to the macrolides was more frequent in the USA than in Europe and was the sole trait found to increase during the survey. Doxycycline, chloramphenicol, co-trimoxazole and the two fluoroquinolones tested (ofloxacin and ciprofloxacin) were remarkably effective (resistance lower than 1%). Only doxycycline and, to a lesser extent, co-trimoxazole were partially active against methicillin-resistant strains.

Schito G.C. et al. *Trends in the activity of macrolide and beta-lactam antibiotics and resistance development. Alexander Project Group.* J Chemother. 1997; 9 Suppl 3 : 18-28.p Abstract: The Alexander Project is an ongoing international multicenter study monitoring trends in the antimicrobial susceptibilities of community-acquired lower respiratory tract (LRT) pathogens. In 1995, 4011 isolates were collected. The incidence of beta-lactamase-positive Haemophilus influenzae was 28.4% in the United States and 15.4% in Europe, and the incidence of beta-lactamase-positive Moraxella catarrhalis has risen to > 90% in Europe and the United States. The incidence of penicillin-resistant Streptococcus pneumoniae is higher in Europe (24.9%) than the Unites States (12.3%). For the majority of centers, there is a marked association between penicillin and macrolide resistance in S. pneumoniae with erythromycin, azithromycin and clarithromycin exhibiting MIC90s of > or = 32 mg/l against penicillin-resistant strains. For Toulouse and Genoa, at least, the high levels of macrolide resistance may be attributable to high macrolide usage. Ceftriaxone and amoxycillin/clavulanate are the most potent agents for empirical therapy, with MIC90s of < or = 2 mg/l against all three principal pathogens. The majority of oral agents studied are active against > 90% H. influenzae and M. catarrhalis and > 80% S. pneumoniae on breakpoint criteria. However, on the basis of the time above MIC criteria for the beta-lactam and macrolide agents tested, only amoxycillin/clavulanate and the parenteral agent ceftriaxone can be recommended for empirical therapy of LRT infections caused by these pathogens.

Schlager T.A. et al. *Expression of virulence factors among Escherichia coli isolated from the periurethra and urine of children with neurogenic bladder on intermittent catheterization.* Pediatr Infect Dis J. 2000; 19(1) : 37-41.p Abstract: BACKGROUND: Patients with neurogenic bladder caused by spinal cord injury or myelomeningocele empty their bladder several times a day by intermittent catheterization. Bacteriuria without symptoms of infection is frequently present in these patients. Occasionally a clone of Escherichia coli that has been carried for weeks without symptoms causes a symptomatic urinary tract infection. Virulence factors are commonly expressed among E. coli causing infection in patients with normal urinary tracts. However, it is unknown whether expression of virulence factors by an E. coli clone colonizing the neurogenic bladder increases the risk of subsequent infection. In this study we examined the prevalence of virulence factor expression among E. coli isolated from the periurethra and urine of patients with neurogenic bladder. METHODS: The prevalence of virulence factors was examined among E. coli isolated from the periurethra and urine in patients with neurogenic bladder who received intermittent catheterization and were followed for 6 months. Representative isolates from the 37 clonal types of E. coli detected in the periurethra and urine of children with neurogenic bladder were assessed for O antigen, hemolysin, aerobactin, serum resistance and type I and P-adhesin. RESULTS: All clones were serum-resistant and expressed type I adhesin, none expressed aerobactin and two expressed hemolysin. The presence of P-adhesin was not unique to clones associated with symptomatic infection. The presence of P-adhesin carried for weeks in a clone did not predict subsequent infection in the neurogenic bladder. CONCLUSION: Bacterial virulence factors did not predict infection of the neurogenic bladder.

Schleiermacher D. et al. *[Mycobacterium avium infection presenting as a mass in the right lung].* Med Klin. 2000; 95(2) : 93-5.p Abstract: BACKGROUND: The diagnostic procedure of pulmonary masses in patients with AIDS is presented. CASE REPORT: A 39-year-old patient with AIDS was admitted to hospital because of a non-productive cough and radiologic evidence of mediastinal and right hilar masses suggestive of lymphoma associated with pneumonia of the right lower lobe. Bronchoscopy revealed a stenosis of the right lower lobe bronchus with small endobronchial lesions. Biopsies showed granulomatous inflammation, but no microorganisms were detected. Chest pain with dyspnea developed and was relieved by evacuation of pus during mediastinoscopy. The diagnosis of Mycobacterium avium infection was established via culture of sputum and bronchoalveolar lavage fluid and via mediastinoscopy. The patient was commenced on a 3-drug regimen with rifabutin, ethambutol and clarithromycin and has remained asymptomatic now for over 9 months. CONCLUSION: Mycobacterium avium infection needs to be included in the differential diagnosis of patients with AIDS presenting with mediastinal and hilar masses. When procedures such as bronchoscopy and chest CT-scans are non-diagnostic, mediastinoscopy may become necessary in order to establish the diagnosis.

Schmitz F.J. et al. *The prevalence of low- and high-level mupirocin resistance in staphylococci from 19 European hospitals.* J Antimicrob Chemother. 1998; 42(4) : 489-95.p Abstract: The topical agent mupirocin plays a crucial role in strategies designed to control outbreaks of methicillin-resistant Staphylococcus aureus. The extent of high- or low-level mupirocin resistance amongst S. aureus from European hospitals is not known. Six hundred and ninety-nine S. aureus and 249 coagulase-negative staphylococci (CNS) derived from blood, hospital-acquired pneumonia or skin and soft tissue infections from 19 European hospitals were tested for susceptibility to mupirocin and oxacillin. Methicillin sensitivity was found in 72% and 32% of S. aureus and CNS, respectively. High-level mupirocin resistance was detected in 1.6% of S. aureus and 5.6% of CNS isolates, while low-level mupirocin resistance was detected in 2.3% of S. aureus and 7.2% of CNS isolates. Amongst S. aureus, methicillin-resistant isolates were twice as likely to have high- or low-level mupirocin resistance. This difference was less pronounced in CNS. No relationship was found between the site of infection and prevalence of mupirocin resistance. High- and low-level mupirocin resistance was detected amongst staphylococci from 10 and 16 of the hospitals studied, respectively. To maintain the relatively low prevalence of mupirocin resistance in Europe amongst both S. aureus and CNS, the prudent use of mupirocin restricted to defined infection control strategies should be emphasized.

Schmitz F.J. et al. *Comparative activity of 27 antimicrobial compounds against 698 Streptococcus pneumoniae isolates originating from 20 European university hospitals. SENTRY Participants Group.* Eur J Clin Microbiol Infect Dis. 1999; 18(6) : 450-3.p Abstract: The purpose of this study was to compare the in vitro activity of 27 antimicrobial compounds against 698 clinical Streptococcus pneumoniae isolates collected at 20 European university hospitals. Of the isolates tested, 21.3% were intermediately resistant to penicillin and 6.2% displayed high-level resistance to penicillin. Resistance to different antibiotics was more common among intermediately penicillin-resistant strains than among penicillin-susceptible strains and was most common among high-level penicillin-resistant organisms. The results of the current surveillance study confirm the ongoing trend among European clinical pneumococcal isolates of decreased sensitivity to various antibiotics.

Schmitz F.J. et al. *Prevalence of aminoglycoside resistance in 20 European university hospitals participating in the European SENTRY Antimicrobial Surveillance Programme.* Eur J Clin Microbiol Infect Dis. 1999; 18(6) : 414-21.p Abstract: The aim of this study was to analyse the current prevalence of aminoglycoside resistance in Europe and compare the in vitro activity of amikacin, gentamicin, and tobramycin against 7057 bacterial isolates from 20 university hospitals participating in

the European SENTRY Antimicrobial Surveillance Programme. Amikacin exhibited better in vitro activity than tobramycin and gentamicin against most gram-negative bacilli in Europe. The resistance levels were 0.4-3% for amikacin, 2-13.1% for gentamicin, and 2.5-15.3% for tobramycin among different members of the family Enterobacteriaceae. Of the Staphylococcus aureus isolates tested, 75% were susceptible to gentamicin. Only 21% of all enterococcal strains tested were fully susceptible to gentamicin. Although intra-country variations in the prevalence of resistance phenotypes in Escherichia coli, Klebsiella spp., and Pseudomonas aeruginosa as well as in staphylococci and enterococci did occur, aminoglycoside resistance rates were generally higher in Italy, Portugal, Spain, Greece, France, the UK, and Poland than in Austria, Belgium, Germany, the Netherlands, and Switzerland. Compared with the 1987-88 data of the European Study Group on Antibiotic Resistance, gentamicin resistance has increased up to 5% in some gram-negative bacterial species. Furthermore, a greater than 10% increase in resistance to gentamicin has been seen in Staphylococcus aureus during the last decade. The reason for this observation is unclear, although changes in antibiotic prescribing patterns that result in increased selective pressure from gentamicin may have contributed to these increased rates of aminoglycoside resistance.

Schmutzhard E. et al. *A randomised comparison of meropenem with cefotaxime or ceftriaxone for the treatment of bacterial meningitis in adults. Meropenem Meningitis Study Group.* J Antimicrob Chemother. 1995; 36 Suppl A : 85-97.p Abstract: Third-generation cephalosporins are presently the agents of choice for the empirical antimicrobial therapy of bacterial meningitis. However, a number of factors associated with these agents, namely the development of resistance by pneumococci, limited activity against some Enterobacteriaceae and Pseudomonas spp., and the possible adverse effects of their bacteriolytic mode of action, indicate that newer classes of antimicrobial agents be evaluated for the treatment of bacterial meningitis. Meropenem is a carbapenem antibiotic which is highly active against the major bacterial pathogens causing meningitis, and penetrates well into the cerebrospinal fluid. Two prospective randomised studies in 56 adult bacterial meningitis patients have compared meropenem 40 mg/kg 8-hourly, up to a maximum of 6 g/day (n = 28) with cephalosporin treatment, i.e. cefotaxime (n = 17) or ceftriaxone (n = 11). Patients were assessed by neurological examination, Glasgow Coma Score and Herson-Todd score. Clinical cure was observed in all 23 evaluable patients treated with meropenem (100%) and with 17 of the 22 evaluable cephalosporin-treated patients (77%). All pre-treatment isolates were eradicated except one isolate of Staphylococcus aureus in a cefotaxime-treated patient. Neurological sequelae were noted in three meropenem and four cephalosporin-treated patients. No patients in either treatment group experienced seizures after the start of therapy. This was despite the fact that a patient in each group had experienced seizures before therapy, several had underlying CNS disorders, and that doses of 6 g/day of meropenem were given. Hearing impairment was recorded in 11 meropenem and nine cephalosporin treated patients. Three patients in the meropenem group and one in the cephalosporin group died during treatment for reasons unrelated to study therapy. Overall, the results of this study indicate that meropenem is an effective and well-tolerated antibiotic for the treatment of bacterial meningitis in adults.

Schneider J. et al. *Degradation of pyrene, benz[a]anthracene, and benzo[a]pyrene by Mycobacterium sp. strain RJGII-135, isolated from a former coal gasification site.* Appl Environ Microbiol. 1996; 62(1) : 13-9.p Abstract: The degradation of three polycyclic aromatic hydrocarbons (PAH), pyrene (PYR), benz[a]anthracene (BAA), and benzo[a]pyrene (BaP), by Mycobacterium sp. strain RJGII-135 was studied. The bacterium was isolated from an abandoned coal gasification site soil by analog enrichment techniques and found to mineralize [14C]PYR. Further degradation studies with PYR showed three metabolites formed by Mycobacterium sp. strain RJGII-135, including 4,5-phenanthrene-dicarboxylic acid not previously isolated, 4-phenanthrene-carboxylic acid, and 4,5-pyrene-dihydrodiol. At least two dihydrodiols, 5,6-BAA-dihydrodiol and 10,11-BAA-dihydrodiol, were confirmed by high-resolution mass spectral and fluorescence analyses as products of the biodegradation of BAA by Mycobacterium sp. strain RJGII-135. Additionally, a cleavage product of BAA was also isolated. Mass spectra and fluorescence data support two different routes for the degradation of BaP by Mycobacterium sp. strain RJGII-135. The 7,8-BaP-dihydrodiol and three cleavage products of BaP, including 4,5-chrysene-dicarboxylic acid and a dihydro-pyrene-carboxylic acid metabolite, have been isolated and identified as degradation products formed by Mycobacterium sp. strain RJGII-135. These latter results represent the first example of the isolation of BaP ring fission products formed by a bacterial isolate. We propose that while this bacterium appears to attack only one site of the PYR molecule, it is capable of degrading different sites of the BAA and BaP molecules, and although the sites of attack may be different, the ability of this bacterium to degrade these PAH is well supported. The proposed pathways for biodegradation of these compounds by this Mycobacterium sp. strain RJGII-135 support the dioxygenase enzymatic processes reported previously for other bacteria. Microorganisms like Mycobacterium sp. strain RJGII-135 will be invaluable in attaining the goal of remediation of sites containing mixtures of these PAH.

Schneider R.F. *Bacterial pneumonia.* Semin Respir Infect. 1999; 14(4) : 327-32.p Abstract: Bacterial pneumonia is significantly more common in persons who are HIV-infected than in the general population and is most common among injection drug users and in persons with advanced HIV disease and immunosuppression. The clinical features of bacterial pneumonia are similar to those in HIV-seronegative persons, but bacteremia is more common. When a pathogen is identified, Streptococcus pneumoniae is consistently the most common, occurring in 20% to 70% of cases. Haemophilus influenzae, Staphylococcus aureus, Escherichia coli, and other gram-negative organisms are mainly responsible for the remainder of bacterial pneumonia episodes in the United States, Central Africa, Australia, and England. In some studies, Chlamydia pneumoniae was recognized as a common cause in persons with early HIV disease, whereas Pseudomonas aeruginosa is recognized as a community- and hospital-acquired lower respiratory tract pathogen in patients with severe immunosuppression. Although antimicrobial therapy is frequently empiric, it should be tailored to the severity of illness, local prevalence of infections, resistance patterns, or when an etiologic agent is identified. The treatment response is similar in patients with and without HIV infection, but bacterial pneumonia may accelerate the progression of HIV disease. Preventative measures include use of the polyvalent pneumococcal vaccine, especially early in the course of HIV infection, when it is most likely to be effective. The incidence of bacterial pneumonia is also reduced in HIV-seropositive persons who use trimethoprim-sulfamethoxazole to prevent Pneumocystis carinii pneumonia.

Schouten M.A. et al. *Antimicrobial susceptibility patterns of enterococci causing infections in Europe. The European VRE Study Group.* Antimicrob Agents Chemother. 1999; 43(10) : 2542-6.p Abstract: In vitro susceptibilities of 4,208 enterococci (83% Enterococcus faecalis isolates, 13.6% Enterococcus faecium isolates, and 3.4% isolates of other species) from patients in 27 European countries towards 16 antibiotics were determined. High-level resistance to gentamicin varied by country (range, 1 to 49%; mean, 22.6% +/- 12. 3%) and per species (19.7% E. faecalis isolates, 13.6% E. faecium isolates, 3.4% by other species). Vancomycin resistance was detected in 0.06% E. faecalis, 3.8% E. faecium, and 19.1% isolates of other species. All enterococci were susceptible to LY 333328 and everninomicin, and 25% of E. faecalis isolates and 85% of other enterococci were susceptible to quinupristin-dalfopristin. The MIC of moxifloxacin and trovafloxacin for ciprofloxacin-susceptible E. faecalis at which 90% of the isolates were inhibited was 0.25 to 0.5 microg/ml.

Schrag S.J. et al. *Adaptation to the fitness costs of antibiotic resistance in Escherichia coli*. Proc R Soc Lond B Biol Sci. 1997; 264(1386) : 1287-91.p Abstract: Policies aimed at alleviating the growing problem of drug-resistant pathogens by restricting antimicrobial usage implicitly assume that resistance reduces the Darwinian fitness of pathogens in the absence of drugs. While fitness costs have been demonstrated for bacteria and viruses resistant to some chemotherapeutic agents, these costs are anticipated to decline during subsequent evolution. This has recently been observed in pathogens as diverse as HIV and Escherichia coli. Here we present evidence that these gentic adaptations to the costs of resistance can virtually preclude resistant lineages from reverting to sensitivity. We show that second site mutations which compensate for the substantial (14 and 18% per generation) fitness costs of streptomycin resistant (rpsL) mutations in E. coli create a genetic background in which streptomycin sensitive, rpsL+ alleles have a 4-30% per generation selective disadvantage relative to adapted, resistant strains. We also present evidence that similar compensatory mutations have been fixed in long-term streptomycin-resistant laboratory strains of E. coli and may account for the persistence of rpsL streptomycin resistance in populations maintained for more than 10,000 generations in the absence of the antibiotic. We discuss the public health implications of these and other experimental results that question whether the more prudent use of antimicrobial chemotherapy will lead to declines in the incidence of drug-resistant pathogenic microbes.

Schreiber J.R. et al. *Antibiotic-resistant pneumococci*. Pediatr Clin North Am. 1995; 42(3) : 519-37.p Abstract: Antibiotic-resistant pneumococci are increasing in prevalence in the United States and are present in numerous areas of the country. Simple screening methods available to identify penicillin-resistant strains and improved national surveillance programs should give more accurate data on the frequency that these resistant pneumococci are causing disease. It is logical to assume that, as the prevalence of nasopharyngeal carriage of these strains increases, more and more invasive infections in children will be caused by antibiotic-resistant pneumococci in the future. The treatment of invasive infections, particularly meningitis, caused by penicillin-resistant and multiply resistant strains, and the treatment of AOM caused by pneumococci resistant to all currently available oral preparations remains problematic. Controlled studies are necessary to determine optimal antimicrobials or other interventions necessary to treat these infections. Finally, prevention of colonization and subsequent infection by the pneumococcus assumes new urgency as antimicrobial resistance spreads. Potentially effective vaccines, such as the new polysaccharide-protein conjugate vaccines that will have efficacy in small children, are currently in early field trials and ultimately may be the best mechanism to deal with the spread of these organisms.

Schreier H. et al. *Molecular effects of povidone-iodine on relevant microorganisms: an electron-microscopic and biochemical study.* Dermatology. 1997; 195 Suppl 2 : 111-6.p Abstract: The aim of this study was to elucidate the effects of povidone-iodine (PVP-I) on cell ultrastructure by electron microscopy and to monitor changes in enzyme activity and nucleotide efflux. Staphylococcus aureus, Escherichia coli and Candida albicans, medically relevant gram-positive, gram-negative and yeast microorganisms, served as models. In the presence of PVP-I, rapid partitioning of the cytoplasm and pronounced coagulation of nuclear material was noted. E. coli and S. aureus showed no major structural wall damage. C. albicans exhibited a rapid, dose-dependent 'loosening' of the cell wall; cells remained intact without lysis, rupture or wall breakage. Changes in beta-galactosidase and nucleotide concentrations were measured in E. coli. A rapid and dose-dependent loss of cellular beta-galactosidase activity was found, with no increase in the supernatant; loss of cellular nucleotides corresponded with an increase in the supernatant. Electron-microscopic and biochemical observations support the conclusion that PVP-I interacts with cell walls of microorganisms causing pore formation or generating solid-liquid interfaces at the lipid membrane level which lead to loss of cytosol material, in addition to enzyme denaturation.

Schrock J. et al. *Susceptibility of ninety-eight clinical isolates of Legionella to macrolides and quinolones using the Etest*. Diagn Microbiol Infect Dis. 1997; 28(4) : 221-3.p Abstract: Isolates of Legionella from 98 patients with Legionnaires' disease hospitalized in Columbus, Ohio, USA between 1991 through 1995 were tested for antimicrobial susceptibility to macrolides and quinolones using the Etest. Most (87%) isolates were Legionella pneumophila serogroup 1. All isolates tested remain susceptible to erythromycin, azithromycin, clarithromycin, ciprofloxacin, ofloxacin, and levofloxacin. In vitro susceptibility testing of Legionella to representative macrolides and quinolones should be considered to detect the emergence of resistant isolates.

Schroder J.M. *Epithelial peptide antibiotics.* Biochem Pharmacol. 1999; 57(2) : 121-34.p Abstract: Surfaces of higher eukaryotes such as plants, invertebrates, and vertebrates, including humans, are normally covered with microorganisms but usually are not infected by them. The reason, apart from physical barriers, is the production of gene-encoded antimicrobial peptides by epithelial cells. Many novel antimicrobial peptides have been discovered recently in the epithelia of plants, insects, amphibians, and cattle, and, more recently, also in humans. In situ hybridization studies indicate a rather organ-specific expression of the genes for peptide antibiotics, which, due to their antimicrobial spectrum and conditions of expression, may also define the physiologic microflora. Some epithelial antimicrobial peptides are constitutively expressed; others are inducible, either by the presence of microorganisms via as of yet not well characterized elicitor receptors or by endogenous proinflammatory cytokines. Most antimicrobial peptides kill microorganisms by forming pores in the cell membrane, and the sensitivity of some peptide antibiotics towards cholesterol, a major mammalian cell membrane constituent, may indicate why these peptide antibiotics are not toxic for mammalian cells. Thus, it seems to be difficult for microorganisms to acquire resistance, making these peptides very attractive for therapeutic use as antibiotics. The first clinical studies are very promising, and after solving the problems of a large-scale biotechnical synthesis, which is more complicated due to the principally suicidal activity of these peptides, a number of new natural structure-based peptides may be developed. Furthermore, discovery of the inducibility of many antimicrobial peptides may also lead to the development of compounds that elicit epithelial defense reactions by stimulating the synthesis of endogenous peptide antibiotics.

Schroder J.M. et al. *Human beta-defensin-2*. Int J Biochem Cell Biol. 1999; 31(6) : 645-51.p Abstract: Human beta-defensin-2 (HBD-2) is a cysteine-rich cationic low molecular weight antimicrobial peptide recently discovered in psoriatic lesional skin. It is produced by a number of epithelial cells and exhibits potent antimicrobial activity against Gram-negative bacteria and Candida, but not Gram-positive Staphylococcus aureus. HBD-2 represents the first human defensin that is produced following stimulation of epithelial cells by contact with microorganisms such as Pseudomonas aeruginosa or cytokines such as TNF-alpha and IL-1 beta. The HBD-2 gene and protein are locally expressed in keratinocytes associated with inflammatory skin lesions such as psoriasis as well as in the infected lung epithelia of patients with cystic fibrosis. It is intriguing to speculate that HBD-2 is a dynamic component of the local epithelial defense system of the skin and respiratory tract having a role to protect surfaces from infection, and providing a possible reason why skin and lung infections with Gram-negative bacteria are rather rare.

Schuster M. et al. *The carina as a landmark in central venous catheter placement*. Br J Anaesth. 2000; 85(2) : 192-4.p Abstract: Location of the tip of a central venous catheter (CVC) within the pericardium has been associated with potentially lethal cardiac tamponade. Because the pericardium cannot be seen on chest x-ray (CXR), an alternative radiographic marker is needed for correct placement of

CVCs. The anatomy of the region was studied in 34 cadavers. The carina was a mean (SEM) distance of 0.4 (0.1) cm above the pericardial sac as it transverses the superior vena cava (SVC). In no case was the carina located below the pericardial sac. The carina is a reliable, simple anatomical landmark for the correct placement of CVCs. In almost all cases, the carina is radiologically visible even in poor quality, portable CXRs. CVC tips should be located in the SVC above the level of the carina in order to avoid cardiac tamponade.

Schwab U. et al. *In vitro activities of designed antimicrobial peptides against multidrug-resistant cystic fibrosis pathogens.* Antimicrob Agents Chemother. 1999; 43(6) : 1435-40.p Abstract: The emergence of multidrug-resistant pathogens renders antibiotics ineffective in the treatment of lung infections in patients with cystic fibrosis (CF). Designed antimicrobial peptides (DAPs) are laboratory-synthesized peptide antibiotics that demonstrate a wide spectrum of antibacterial activity. Optimal conditions for susceptibility testing of these peptides have not yet been established. Medium composition is clearly a major factor influencing the results and reproducibilities of susceptibility tests. Using time-kill assays, we tested the effects of different media and buffers on the bactericidal activities of the peptides D2A21 and D4E1 on Staphylococcus aureus ATCC 29213 and Pseudomonas aeruginosa ATCC 27853. Each peptide at 1 and 5 microM was incubated with bacteria in the different media and buffers. Both peptides were most active in Tris-HCl buffer against S. aureus and P. aeruginosa. Among the more complex media tested, modified RPMI medium was the medium in which the peptides demonstrated the highest activity, while it supported the growth of the bacteria. The broth microdilution technique was used to test the activities of D2A21 and D4E1 in modified RPMI medium against multidrug-resistant pathogens from patients with CF. The MICs of DAPs for methicillin-resistant S. aureus ranged from 0.25 to 4 microg/ml, those for multidrug-resistant P. aeruginosa ranged from 0.125 to 4 microg/ml, those for Stenotrophomonas maltophilia ranged from 0.5 to 32 microg/ml, and those for Burkholderia cepacia ranged from 32 to >/=64 microg/ml. When the activity of peptide D2A21 was compared with that of the tracheal antimicrobial peptide (TAP), D2A21 had greater potency than TAP against P. aeruginosa. In addition, no difference in the MICs of D2A21 was seen when it was tested in nutrient broth supplemented with NaCl at different concentrations. Thus, DAPs are a class of salt-insensitive antibiotics potentially useful in the treatment of CF patients harboring multidrug-resistant P. aeruginosa.

Schwartz M.T. et al. *Therapy of penicillin-resistant pneumococcal meningitis.* Zentralbl Bakteriol. 1995; 282(1) : 7-12.p Abstract: Antimicrobial therapy of pneumococcal meningitis has been altered in recent years based on changes in pneumococcal susceptibility patterns, with emergence of strains that are either relatively or highly resistant to penicillin G (minimal inhibitory concentrations of 0.1-1.0 micrograms/ml and > or = 2 micrograms/ml, respectively. In areas of the world where relatively penicillin-resistant strains of Streptococcus pneumoniae are present, the third generation cephalosporins (either cefotaxime or ceftriaxone) should be used as empiric therapy, and for highly penicillin-resistant pneumococcal strains, vancomycin (with or without rifampin) is recommended. It is imperative that susceptibility testing be performed on all cerebrospinal fluid pneumococcal isolates to guide the choice of antimicrobial therapy. Vaccination recommendations with the 23-valent pneumococcal vaccine should also be strictly enforced for use in appropriate populations that are at increased risk of pneumococcal infections.

Sciortino C.V. et al. *Vitek system antimicrobial susceptibility testing of O1, O139, and non-O1 Vibrio cholerae.* J Clin Microbiol. 1996; 34(4) : 897-900.p Abstract: Vibrio cholerae causes epidemic diarrhea throughout the world. Fluid replacement is the primary therapy for cholera; however, high mortality rates often necessitate the use of antibiotics. V. cholerae, like most bacteria, has developed resistance to some antibiotics. In the early 1990s a new serotype strain, Bengal 0139, began a new wave of cholera epidemics. Bengal isolates showed unique trends in antimicrobial resistance. Many clinical laboratories use automated antibiotic susceptibility testing for V. cholerae. It is important to know if automated susceptibility test results for V. cholerae coincide with reported trends in antibiotic susceptibility. In the present study, we used the Vitek automated susceptibility system to determine the susceptibilities of 79 V. cholerae O1 isolates, 100 O139 isolates, and 112 non-O1 isolates. Vitek susceptibilities for V. cholerae showed a good correlation with preestablished epidemiological data. Although the new O139 serogroup showed a trend of increased resistance to trimethoprim-sulfamethoxazole and nitrofurantoin, it was more susceptible to ampicillin than previous serogroup O1 and non-O1 strains. Regardless of serogroup, > or = 98% of the V. cholerae isolates tested were susceptible to most antibiotics tested by us. It is important to continue susceptibility testing of all new isolates of V. cholerae because of emerging resistant strains. However, V. cholerae remains susceptible to most of the available antibiotics.

Secmeer G. et al. *Salmonella typhi infections. A 10-year retrospective study.* Turk J Pediatr. 1995; 37(4) : 339-41.p Abstract: Enteric fever is still a common health problem in many countries, especially in children. Thus a ten-year retrospective study was carried out to evaluate the clinical and laboratory properties of enteric fever and the incidence of antimicrobial resistance in children. Throughout the past 10 years, Salmonella was isolated in 105 patients by blood culturing, 27 of which were Salmonella typhi. Most of the patients were above the age of two. Besides the typical symptoms and signs of enteric fever, 29.2% of the patients had some neurologic findings. Besides, 68.5% had elevated liver enzymes while only 44.4% had hepatomegaly with or without splenomegaly. Anemia was present in 44%, leukopenia in 16% and leukocytosis in 11.1% of the cases. The emergence of antimicrobial resistance during the last five years against ampicillin, chloramphenicol and trimetoprim-sulfamethoxazole has created a challenge in treating these infections.

Sedgley C.M. et al. *Antimicrobial susceptibility of oral isolates of Enterobacter cloacae and Klebsiella pneumoniae from a southern Chinese population.* Oral Microbiol Immunol. 1998; 13(5) : 315-21.p Abstract: The antibiotic susceptibilities of 59 Enterobacter cloacae and 39 Klebsiella pneumoniae human oral isolates collected from a southern Chinese population in Hong Kong were investigated for their susceptibility to eight antibiotics: ampicillin, cephalothin, cefuroxime, ceftazidime, ciprofloxacin, gentamicin, tetracycline and trimethoprim/sulfamethoxazole using the E-Test method for direct quantification of minimum inhibitory concentrations. Most strains were sensitive to all antibiotics except ampicillin and cephalothin. Ampicillin resistance was exhibited by 82% of K. pneumoniae and 69% of E. cloacae isolates. Eighty-eight percent of E. cloacae isolates were resistant to cephalothin. Several strains fell within the intermediate category of sensitivity for ampicillin (E. cloacae and K. pneumoniae), cefuroxime (E. cloacae) and tetracycline (K. pneumoniae). Comparison with other Hong Kong data suggests that resistance rates to cefuroxime, ceftazidime, ciprofloxacin, gentamicin, tetracycline and trimethoprim/sulfamethoxazole exhibited by the oral isolates are generally lower than in enterobacters and Klebsiella spp. isolated from urine, skin and soft tissues in Hong Kong populations.

Sednaoui P. et al. *["Second look" at cytotoxin B of Clostridium difficile in the course of diarrhea associated with antibiotic therapy].* Pathol Biol (Paris). 1999; 47(5) : 415-21.p Abstract: Clostridium difficile is a sporulated obligate anaerobe responsible for most cases of antibiotic-associated colitis, for 15 to 25% of cases of antibiotic-related diarrhea, and for a substantial proportion of nosocomial infections. The most important laboratory test for the diagnosis of C. difficile infection is examination of the stool for C. difficile toxins A and/or B. Detection of cytotoxin B using the direct cytotoxicity assay (D-CA) is the gold standard test. Whether routine isolation of the organism from stool

is warranted remains controversial. OBJECTIVES: To evaluate second-look CA done on C. difficile culture-positive filtrates from stool samples negative by the D-CA. METHODS: 300 consecutive stool samples sent to the Alfred Fournier Institute from April through October 1998 for a CA were routinely cultured on modified Cefoxitin Cycloserine Fructose Agar medium (CCFA). All CA-negative samples that grew C. difficile were examined by second-look CA. RESULTS: 245 stool specimens (81.7%) were negative by both CA and culture. The remaining 55 specimens all yielded C. difficile by culture; 32 (58.2%) had a positive D-CA and nine (16.4%) a negative D-CA with a positive second-look CA done on culture filtrates. CONCLUSION: Our data suggest that stool specimens sent for a direct CA should be routinely cultured to provide material for a second-look CA on culture-positive filtrates if the first CA prove negative. Culturing also allows to study antimicrobial drug resistance phenotypes and epidemiological markers.

Sedor J. et al. *Hospital-acquired urinary tract infections associated with the indwelling catheter.* Urol Clin North Am. 1999; 26(4) : 821-8.p Abstract: Indwelling urethral catheters are commonly used in patients admitted to acute care hospitals. Forty percent of nosocomial infections occur in the urinary tract, and greater than 80% of these infections are secondary to an indwelling urethral catheter. Fortunately, the majority of catheters are left indwelling for a short period of time. The duration of catheterization is directly related to the development of bacteriuria, nosocomial infection, and possible bacteremia with sepsis. A relatively low percentage of patients become infected during the first 3 to 5 days if sterile technique and proper maintenance of a closed system are performed. Bacteria may grow in the urine (planktonic) and ascend via the lumen, or bacteria in the biofilm around the outside of the catheter may infect the bladder. Most organisms are from the patient's intestinal flora, but exogenous sources on or near the patient may be involved. The major morbid events associated with the catheter are fever and the possible progression to bacteremia and sepsis. Early recognition of complications and arresting their progression, especially in the high-risk patient, are essential. Current research is directed at developing ways to reduce infection beyond the sterile closed system.

Seelig S.K. et al. *[Spontaneous rupture and embolization: a rare complication after port catheter implantation].* Dtsch Med Wochenschr. 2000; 125(19) : 628-30.p Abstract: HISTORY AND CLINICAL FINDINGS: A 70-year-old male patient had a venous port catheter implanted into his right subclavian vein for neoadjuvant radiochemotherapy of a rectal carcinoma (T3N0N0). Due to the patient's difficult venous access the catheter was left in situ after treatment. 31 weeks later he was admitted to the hospital because of parasternal and subclavicular pain. INVESTIGATIONS: Physical examination and an electrocardiogram revealed no abnormalities. A chest x-ray was performed. DIAGNOSIS, TREATMENT AND COURSE: The chest x-ray showed a normal location of the port-system but the tip of the catheter had embolized into the right atrium. The embolized fragment was extracted with a loop-snare technique and the reservoir of the system was removed under local anaesthesia without any complications. CONCLUSIONS: Despite its frequent use intravascular embolization of catheter fragments from implantable venous port-catheter systems present a rare but potentially life-threatening complication. Any implanted catheters should therefore be removed after completion of treatment or the system's integrity should be monitored on a regular basis.

Sefcova H. *Survey of the microbiological quality of bottled water.* Cent Eur J Public Health. 1998; 6(1) : 42-4.p Abstract: Three different types of bottled water had counts of psychrophilic bacteria (aerobic colony count at 22 degrees C) ranging from 10(0)-10(4) colony forming unit/1 ml. The most frequent type of bottled water to exceed limits for psychrophilic microorganisms was still table water. The growth of psychrophilic microorganisms of up to 10(4) CFU/ml began over the six month storage period.

Segal-Maurer S. et al. *Current perspectives on multidrug-resistant bacteria. Epidemiology and control.* Infect Dis Clin North Am. 1996; 10(4) : 939-57.p Abstract: Antimicrobial resistance in bacteria has diminished the availability of effective antimicrobial agents. Knowledge of epidemiology, mechanisms of resistance, and new diagnostic modalities can help to identify and treat patients at risk for infection by these organisms. Limited or nonexistent effective microbial therapy underscores the importance of effective preventive and containment measures.

Segreti J. et al. *Bacteriologic and clinical applications of a new extended-spectrum parenteral cephalosporin.* Am J Med. 1996; 100(6A) : 45S-51S.p Abstract: Although third-generation cephalosporins have been considered the backbone of antibiotic therapy for the treatment of many kinds of serious infections, including those in hospitalized patients, lack of activity against some important pathogens still exists among currently available drugs. In addition, increasing accounts of antibiotic resistance, particularly in the hospital environment, are of deep concern and have thus led to the need for the development of newer antimicrobial agents. Cefepime is a now parenteral cephalosporin with an extended spectrum of antibacterial activity that includes both aerobic gram-negative and gram-positive bacteria. It is also active against many gram-negative organisms resistant to ceftriaxone and cefotaxime, as well as many strains of Enterobacter and Citrobacter resistant to ceftazidime. Cefepime appears to be less likely to select out resistant organisms, and it may be less likely to change hospital flora than currently available antimicrobials. Cefepime has been shown to be very well tolerated and effective in the treatment of a variety of infections including moderate-to-severe pneumonia (including cases associated with concurrent bacteremia), complicated and uncomplicated urinary tract infections (also including cases associated with concurrent bacteremia), and skin and skin-structure infections. Clinical response rates are > or = 75% for most infections and have been comparable to ceftazidime in comparative trials. In addition, pretreatment susceptibility testing indicates that >94% of organisms isolated in patients enrolled in clinical trials were susceptible to cefepime.

Seguin J.C. et al. *Methicillin-resistant Staphylococcus aureus outbreak in a veterinary teaching hospital: potential human-to-animal transmission.* J Clin Microbiol. 1999; 37(5) : 1459-63.p Abstract: During a 13-month period, 11 equine patients visiting a veterinary teaching hospital for various diagnostic and surgical procedures developed postprocedural infections from which methicillin (oxacillin)-resistant Staphylococcus aureus (MRSA) strains were isolated. The S. aureus isolates were identified by conventional methods that included Gram staining, tests for colonial morphology, tests for clumping factor, and tests for coagulase and urease activities and were also tested with the API STAPH IDENT system. Antimicrobial susceptibility tests were performed by the disk diffusion method. The biochemical profile and antibiogram of each isolate suggested that the isolates may have come from a common source. Because MRSA strains are very uncommon animal isolates but are rather common human isolates, a nasal swab specimen for culture was collected voluntarily from five persons associated with equine surgery and recovery in an attempt to identify a possible source of the organisms. MRSA strains were isolated from three of the five people, with one person found to be colonized with two biotypes of MRSA. The MRSA isolates from the people appeared to be identical to the isolates from horses. Further study of the isolates included SmaI and EagI macrorestriction analysis by pulsed-field gel electrophoresis conducted in two different laboratories. The results indicated that both the equine and human isolates were members of a very closely related group which appear to have originated from a common source. On the basis of the pattern associated with the infection, it is speculated that the members of the Veterinary Teaching Hospital staff were the primary source of the infection, although the specific mode of transmission is unclear.

Seifert H. *Comparative in-vitro activities of trovafloxacin, ciproflaxacin, ofloxacin, and broad-spectrum beta-lactams against aerobe blood culture isolates.* Zentralbl Bakteriol. 1998; 288(4) : 509-18.p Abstract: The in vitro activity of trovafloxacin, a new fluoroquinolone, was compared with that of ciprofloxacin, ofloxacin, fleroxacin, ceftazidime, piperacillin/tazobactam, and meropenem against 613 consecutively recovered blood isolates from recently hospitalized patients. Susceptibility testing was performed by agar dilution according to NCCLS guidelines. Test strains included Acinetobacter species (n = 26), Escherichia coli (n = 137), Enterobacter species (n = 27), Klebsiella species (n = 42), Proteus species (n = 16), Pseudomonas aeruginosa (n = 28), Serratia marcescens (n = 13), Stenotrophomonas maltophilia (n = 7), enterococci (n = 54), coagulase-negative staphylococci (n = 38), Staphylococcus aureus (n = 137), Streptococcus pneumoniae (n = 27), beta-haemolytic streptococci (n = 13), and viridans group streptococci (n = 48). The overall respective MICs at which 50% and 90% of isolates were inhibited (MIC50s and MIC90s) were as follows: trovafloxacin, 0.06 and 1 mg/l; ciprofloxacin, 0.25 and 4 mg/l; ofloxacin, 0.5 and 4 mg/l; fleroxacin, 0.5 and 16 mg/l; ceftazidime, 2 and 128 mg/l; piperacillin/tazobactam, 2 and 8 mg/l; meropenem, 0.06 and 4 mg/l. For the quinolones, the rank order of activity against gram-negative microorganisms was ciprofloxacin > trovafloxacin > ofloxacin = fleroxacin, against gram-positive organisms, trovafloxacin > ciprofloxacin = ofloxacin > fleroxacin. Data obtained showed the similar activity of trovafloxacin and ciprofloxacin against gram-negative pathogens and the superior activity of trovafloxacin against gram-positive bacteria thus making it a potential candidate for the empiric treatment of patients with suspected bacteremia and sepsis.

Seifert H. et al. *Fatal case due to methicillin-resistant Staphylococcus aureus small colony variants in an AIDS patient.* Emerg Infect Dis. 1999; 5(3) : 450-3.p Abstract: We describe the first known case of a fatal infection with small colony variants of methicillin-resistant Staphylococcus aureus in a patient with AIDS. Recovered from three blood cultures as well as from a deep hip abscess, these variants may have resulted from long-term antimicrobial therapy with trimethoprim/sulfamethoxazole for prophylaxis of Pneumocystis carinii pneumonia.

Seki H. et al. *Increasing prevalence of ampicillin- resistant, non-beta-lactamase-producing strains of Haemophilus influenzae in children in Japan.* Chemotherapy. 1999; 45(1) : 15-21.p Abstract: Among Haemophilus influenzae isolated from children with respiratory tract infections, the evolution of ampicillin resistance was investigated during 1996 and 1997 in Japan. beta-Lactamase production was assessed and minimum inhibitory concentrations (MICs) of eight antimicrobial agents were determined using a broth microdilution method in Mueller-Hinton-lysed horse blood medium. Of 74 H. influenzae, 11 strains (14.9%) produce beta-lactamase and were thus highly resistant to ampicillin (MIC of >4.0 microgram/ ml). In addition, moderate resistance to ampicillin, defined as an MIC of >==1.0 microgram/ml, was noted in 44.4% of all beta-lactamase-negative isolates. These beta-lactamase-negative ampicillin-resistant (BLNAR) organisms were resistant to other cephalosporins such as cefpodoxime and cefdinir, while beta-lactamase-producing strains were susceptible to them. Cefditoren, cefteram, and minocycline were active against all strains studied, whereas cefaclor and clarithromycin were inactive against all H. influenzae isolates in this study. Results indicate that BLNAR strains have emerged among children with respiratory tract infections in Japan.

Selman S. et al. *Pneumococcal conjugate vaccine for young children.* Manag Care. 2000; 9(9) : 49-52, 54, 56-7 passim.p Abstract: Pneumococcal disease is a common cause of morbidity and mortality in the pediatric population. Pneumococcal infections, which account for most serious bacterial disease in infancy and early childhood, are a major cause of acute otitis media, sinusitis, pneumonia, bacterial meningitis, and bacteremia. Streptococcus pneumoniae is the causative agent in a large percentage of these infections, although other microorganisms also play a role. The recent emergence of drug-resistant strains has provided a strong incentive for preventing pneumococcal infections by vaccination. However, the capsular polysaccharide pneumococcal vaccines used to immunize adults are neither immunogenic nor protective in young children due to poor antibody responses. Therefore, research has focused on development of additional immunogenic pneumococcal vaccines to provide long-term immunity in children < 2 years of age. The most promising approach has been the development of a protein-polysaccharide conjugate vaccine for the seven serotypes (4, 6B, 9V, 14, 18C, 19F, and 23F) that most commonly cause infections in childhood. An effective conjugate vaccine that protects against these serotypes has the potential to prevent 85 percent of bacteremia episodes, 83 percent of meningitis episodes, and 65 percent of otitis media cases in the U.S. among children younger than 6 years. The Food and Drug Administration (FDA) recently approved the first protein-polysaccharide conjugate vaccine to prevent invasive pneumococcal diseases in infants and toddlers < 2 years of age. This conjugated vaccine against pneumococcus uses the same technology as the successful vaccine against Haemophilus influenzae type b. It consists of an immunogenic but inert protein coupled covalently to the polysaccharide coat of the selected strains of pneumococci. The conjugated antigen induces a more powerful, T-cell-based immune response in infants, which is developed by the time they are 2 months of age. Some important questions regarding this vaccine for children < 2 years of age: Is the vaccine safe? Is it immunogenic? Is it efficacious in preventing invasive pneumococcal disease and controlling otitis media? FINDINGS: Results of three randomized double-blind trials designed to evaluate the safety and immunogenicity of this vaccine in healthy children < 2 years of age were reported within the last three years. The studies found that the vaccine is safe and highly immunogenic for all seven serotypes. The most recent study, involving over 37,000 young children, also evaluated the vaccine's efficacy, and reported that the vaccine is highly effective in preventing invasive disease and has had an impact on otitis media. CONCLUSIONS: The heptavalent pneumococcal conjugate vaccine is safe and highly effective in preventing pneumococcal meningitis and bacteremic pneumonia in young children < 2 years of age; it is less effective in preventing otitis media. Based on the results of three well-designed studies demonstrating the vaccine's safety, immunogenicity, and efficacy, the vaccine is safe and effective for active immunization of children < 2 years of age against invasive disease caused by seven Streptococcus pneumoniae serotypes included in the vaccine. At this time, there is no clear medical consensus regarding its safety and efficacy for control of otitis media in children < 2 years of age. This application has not been evaluated by the FDA. The pneumococcal conjugate vaccine should be considered experimental, and has not been shown to be safe or efficacious for Streptococcus pneumoniae disease other than that caused by the serotypes included in the vaccine and for invasive infection, such as bacteremia or meningitis, caused by other microorganisms.

Sener B. et al. *Trends in antimicrobial resistance of Streptococcus pneumoniae in children in a Turkish hospital.* J Antimicrob Chemother. 1998; 42(3) : 381-4.p Abstract: The antimicrobial susceptibilities of 143 isolates of Streptococcus pneumoniae recovered from the sputa of children with lower respiratory tract infections in a Turkish university hospital were determined. Five isolates (3.5%) were resistant and 57 isolates (39.9%) intermediately resistant to penicillin. The most common serotype among these resistant isolates was serotype 23, followed by serotypes 19 and 14. The overall resistance rates were 31% for tetracycline, 11% for erythromycin and cefaclor, 4% for chloramphenicol, 2% for cefotaxime and 0% for vancomycin. The data highlight the need for surveillance of resistance and serotype distribution of S. pneumoniae in our geographical area.

Sentsova T.B. et al. *[Antibioticograms of microorganisms isolated from foci of local infections in infants].* Antibiot Khimioter. 1996; 41(1) : 22-6.p

Abstract: Microbiological tests were performed in regard to 474 newborns within 1985-1995. It was shown that gram-positive microflora (Staphylococcus epidermidis and Staphylococcus aureus) predominated in the etiological structure of omphalitis and conjunctivitis. Among gram-negative isolates in the cases with omphalitis there predominated Klebsiella pneumonia. The antibioticograms were of great practical value for the adequate therapy.

Seppala H. et al. *Erythromycin resistance of group A streptococci from throat samples is related to age.* Pediatr Infect Dis J. 1997; 16(7) : 651-6.p Abstract: BACKGROUND: Factors associated to increased antimicrobial resistance among bacterial pathogens have been widely discussed and need to be evaluated. In Finland resistance to erythromycin in group A streptococci has become an important problem among outpatients. The aim of this study was to investigate whether occurrence of erythromycin resistance among group A streptococci isolated from noninvasive infections correlates with the patients' age and sex. METHODS: Group A streptococci isolated from 10 162 patients were tested for erythromycin resistance in 21 regional microbiologic laboratories located throughout Finland. The age of every patient and the sex of 8121 (80%) patients were known. The statistical significance of the association between the patients' age or sex and the occurrence of erythromycin resistance in group A streptococci, isolated from throat swab samples (8568 isolates) or pus samples (1594 isolates), was measured by logistic regression analysis. RESULTS: When erythromycin resistance of the isolates was regressed with the patients' age and sex, the age of the patient was a clearly significant predictor for the throat isolates (beta coefficient = -0.0114, SD 0.0029, observed value of t test statistic = -3.89, P = 0.0001) but not for the pus isolates. The odds ratio for age was 0.99 with a 95% confidence interval of 0.98 to 0.99. Thus the expected risk of erythromycin resistance on a group A streptococcal throat isolate decreased with increasing age by 1% per year. No significant association between the patients' sex and the occurrence of erythromycin resistance was found. CONCLUSIONS: Significant differences may exist between different age groups in the frequency of antibiotic-resistant isolates among outpatients, perhaps caused by differences in antibiotic prescribing. Thus overall resistance levels do not necessarily represent all age groups, especially children.

Seppala H. et al. *Outpatient use of erythromycin: link to increased erythromycin resistance in group A streptococci.* Clin Infect Dis. 1995; 21(6) : 1378-85.p Abstract: Resistance to erythromycin in group A streptococci has become an important problem among outpatients in Finland. The prevention of such problems requires information about the relationship between antimicrobial consumption and antimicrobial resistance. Having found considerable variation among health authority areas in the proportions of group A streptococci resistant to erythromycin, we investigated the potential impact of local differences in the consumption of this agent on the development of resistance. In 1992, 10,162 group A streptococcal isolates (nearly 100% were from outpatients) collected from 206 health authority areas were tested for erythromycin resistance; 1,647 isolates (16%) were resistant. Logistic regression analysis showed that the proportion of isolates resistant to erythromycin clearly increased with increasing local erythromycin consumption by outpatients in 1991 (P =.006). This positive association indicates that a prudent policy for the treatment of outpatients is essential to maintenance of the effectiveness of antimicrobial agents.

Seppala H. et al. *The effect of changes in the consumption of macrolide antibiotics on erythromycin resistance in group A streptococci in Finland. Finnish Study Group for Antimicrobial Resistance.* N Engl J Med. 1997; 337(7) : 441-6.p Abstract: BACKGROUND: In the early 1990s there was an increase in erythromycin resistance among group A streptococci in Finland. In response, policies regarding outpatient antibiotic therapy were changed, and nationwide recommendations were issued that called for reductions in the use of macrolide antibiotics for respiratory and skin infections in outpatients. We studied the effect of this policy on the pattern of erythromycin resistance throughout Finland. METHODS: From 1991 through 1996, a total of 39,247 group A streptococcal isolates from throat swabs (82 percent of the isolates) and pus samples (18 percent) and 290 isolates from blood cultures were studied in regional microbiology laboratories. The susceptibility of the isolates to erythromycin was tested by the disk-diffusion or the screening-plate method. RESULTS: Consumption of macrolide antibiotics decreased from 2.40 defined daily doses per 1000 inhabitants per day in 1991 to 1.38 in 1992 (P=0.007) and remained near the lower level during the study period. The change in consumption was followed by a steady decrease in the frequency of erythromycin resistance among group A streptococcal isolates from throat swabs and pus samples, from 16.5 percent in 1992 to 8.6 percent in 1996 (odds ratio for 1996 as compared with 1992, 0.5; 95 percent confidence interval, 0.4 to 0.5). CONCLUSIONS: In Finland, after nationwide reductions in the use of macrolide antibiotics for outpatient therapy, there was a significant decline in the frequency of erythromycin resistance among group A streptococci isolated from throat swabs and pus samples.

Serov G.D. et al. *[Study of antibiotic sensitivity of microorganisms by the method of diffusion in agar layers].* Klin Lab Diagn. 1998; (3) : 38-40.p Abstract: The proposed method for assessing microorganism sensitivity in solid and semisolid liquid nutrient media provides more accurate results and permits isolation of resistant forms of bacteria and studies of antibiotic interactions. Bacteriological study of latent growth zones of bacteria, although rather long, makes the results more reliable. The method can be used for assessing the microflora sensitivity in patients without resorting to isolation of pure cultures and in biotechnology for isolation of new antibiotics.

Setchanova L. *Clinical isolates and nasopharyngeal carriage of antibiotic-resistant Streptococcus pneumoniae in Hospital for Infectious Diseases, Sofia, Bulgaria, 1991-1993.* Microb Drug Resist. 1995; 1(1) : 79-84.p Abstract: The antimicrobial resistance of Streptococcus pneumoniae was surveyed in 1991-1993 at the Hospital for Infectious Diseases in Sofia, Bulgaria. Pneumococcal isolates were collected from routine clinical specimens and from nasopharyngeal secretions of inpatient carriers. The incidence of penicillin-resistant S. pneumoniae (PRSP) was 24.3% among clinical samples and nasopharyngeal carriage of PRSP was as high as 40% among children. Penicillin-resistant strains were more frequently resistant to non-beta-lactam antibiotics than were penicillin-sensitive strains. More than half of the PRSP strains were multiply resistant. On the basis of MIC values of ampicillin, it was established that ampicillin was not superior to penicillin. The MICs of five cephalosporins were found to increase in parallel with the MICs of penicillin G. Some of the pneumococcal strains that were highly penicillin-resistant were also resistant to cefotaxime/ceftriaxone (MIC = 1-4 micrograms/ml), but the number of strains was small. On the basis of MIC values of cefotaxime and ceftriaxone for strains from cerebrospinal fluid, both antibiotics may be suitable alternatives for treating meningitis due to strains with resistance to penicillin.

Setz J. et al. *Disinfection of pumice.* J Prosthet Dent. 1996; 76(4) : 448-50.p Abstract: Pumice is a potential source of infection for the dental technician and of cross-contamination between different dentures and patients. In this study, the number of microorganisms in two different combinations of pumice and disinfectant was compared with a conventional mixture of pumice and water. The results revealed that under practical conditions the mix of Steribim (pumice containing benzoic acid added by the manufacturer) with water reduced the number of bacteria by 99% compared with a mix of a conventional pumice and water. The addition of an antiseptic product that contained octenidine as active agent to conventional pumice reduced the number of microorganisms by 99.999%.

Sewankambo N. et al. *HIV-1 infection associated with abnormal vaginal flora morphology and bacterial vaginosis.* Lancet. 1997; 350(9077) : 546-50.p

Abstract: BACKGROUND: In-vitro research has suggested that bacterial vaginosis may increase the survival of HIV-1 in the genital tract. Therefore, we investigated the association of HIV-1 infection with vaginal flora abnormalities, including bacterial vaginosis and depletion of lactobacilli, after adjustment for sexual activity and the presence of other sexually transmitted diseases (STDs). METHODS: During the initial survey round of our community-based trial of STD control for HIV-1 prevention in rural Rakai District, south-western Uganda, we selected 4718 women aged 15-59 years. They provided interview information, blood for HIV-1 and syphilis serology, urine for detection of Chlamydia trachomatis and Neisseria gonorrhoeae, and two self-administered vaginal swabs for culture of Trichomonas vaginalis and gram-stain detection of vaginal flora, classified by standardised, quantitative, morphological scoring. Scores 0-3 were normal vaginal flora (predominant lactobacilli). Higher scores suggested replacement of lactobacilli by gram-negative, anaerobic microorganisms (4-6 intermediate; 7-8 and 9-10 moderate and severe bacterial vaginosis). FINDINGS: HIV-1 frequency was 14.2% among women with normal vaginal flora and 26.7% among those with severe bacterial vaginosis ($p < 0.0001$). We found an association between bacterial vaginosis and increased HIV-1 infection among younger women, but not among women older than 40 years; the association could not be explained by differences in sexual activity or concurrent infection with other STDs. The frequency of bacterial vaginosis was similar among HIV-1-infected women with symptoms (55.0%) and without symptoms (55.7%). The adjusted odds ratio of HIV-1 infection associated with any vaginal flora abnormality (scores 4-10) was 1.52 (95% CI 1.22-1.90), for moderate bacterial vaginosis (scores 7-8) it was 1.50 (1.18-1.89), and for severe bacterial vaginosis (scores 9-10) it was 2.08 (1.48-2.94). INTERPRETATION: This cross-sectional study cannot show whether disturbed vaginal flora increases susceptibility to HIV-1 infection. Nevertheless, the increased frequency of HIV-1 associated with abnormal flora among younger women, for whom HIV-1 acquisition is likely to be recent, but not among older women, in whom HIV-1 is likely to have been acquired earlier, suggests that loss of lactobacilli or presence of bacterial vaginosis may increase susceptibility to HIV-1 acquisition. If this inference is correct, control of bacterial vaginosis could reduce HIV-1 transmission.

Seyfarth A.M. et al. *Antimicrobial resistance in Salmonella enterica subsp. enterica serovar typhimurium from humans and production animals.* J Antimicrob Chemother. 1997; 40(1) : 67-75.p Abstract: We have studied the frequency of antimicrobial resistance and epidemiological relatedness among 473 isolates of Salmonella enterica subsp. enterica serovar typhimurium (S. typhimurium) from human and veterinary sources. The human strains were clinical isolates from patients with diarrhoea sent to the State Serum Institute during August 1993 (228 isolates). The animal strains were isolated from clinical or subclinical infections in cattle (48 isolates), pigs (99 isolates) or poultry (98 isolates), all from 1993. All strains were tested against 22 different antimicrobial agents used in both human and veterinary medicine with the tablet diffusion method. Strains were also phage-typed and the plasmid content determined in all resistant strains. Ribotyping was performed on selected strains. Of 228 human isolates tested, 19.3% of the strains were resistant to one or more antimicrobial agent compared with 10.4% of strains from cattle, 11.1% of strains from pigs and 9.2% of strains from poultry. Multiple resistance, i.e. resistance against at least four antimicrobial agents, was found in 9.2% of the human strains, but in only two of the cattle isolates. The majority of the multi-resistant strains in humans were from infections contracted outside Denmark, most often in southern Europe or south-east Asia. Resistance in human strains was most common against tetracycline (13%), ampicillin (12%), sulphonamide (12%), streptomycin (10%) and chloramphenicol (8%). The resistance pattern differed somewhat in animal isolates: Poultry strains were usually resistant only to ampicillin, while pig and cattle isolates were most often resistant to sulphonamide, tetracycline and streptomycin. Typing of the strains showed that some animal strains and human strains were indistinguishable. In conclusion, while antimicrobial resistance was present in S. typhimurium isolated from humans and animals in Denmark, multiple resistance was most often acquired outside Denmark.

Seymour V.M. et al. *A prospective clinical study to investigate the microbial contamination ofa needleless connector.* J Hosp Infect. 2000; 45(2) : 165-8.p Abstract: Needleless connectors, which allow direct access to intravascular catheters, are widely used in clinical practice. The benefits of these devices to healthcare workers are well documented; however, the potential risk of microbial contamination and associated infection is unclear. This clinical study evaluated microbial contamination rates for a needleless connector, Connecta Clave(R) (CC(R)), as compared to a conventional three-way tap, which was connected to the hubs of central venous catheters (CVC) immediately following insertion. Patients in the study group had CC(R) attached to the three-way taps, whereas the control group had standard entry port caps. On removal (up to 72 h) the connectors were studied for microbial contamination. There was no significant difference between the number of three-way taps contaminated on the internal surface with micro-organisms in the control group with entry port caps (19/132, 14%) compared to the group with CC(R) (18/105, 17%). Sixteen percent (27/173) of the CC(R) were contaminated with micro-organisms on the internal surfaces. The external surface of 33% (27/82) of the CC(R) silicone seals were contaminated after clinical use. Micro-organisms were also isolated from 9% (8/91) of the silicone seals after disinfection. The use of this needleless connector, compared to standard caps therefore does not appear to increase the risk of infection via the internal lumen of three-way taps. Copyright 2000 The Hospital Infection Society.

Sforcin J.M. et al. *Seasonal effect on brazilian propolis antibacterial activity.* J Ethnopharmacol. 2000; 73(1-2) : 243-9.p Abstract: The behavior of microorganisms towards the antibiotic action of propolis has been widely investigated. Since reports dealing with seasonal effect on propolis activity are not available, this assay was carried out aiming to observe the in vitro antimicrobial activity of propolis, collected during the four seasons, on bacterial strains isolated from human infections. Dilution of ethanolic extract of propolis (EEP) in agar was the method performed, with serial concentrations ranging from 0.4 to 14.0% (% v/v). The behavior of some bacteria was analysed according to the incubation period in medium plus propolis, and the survival curve was plotted. It was verified that the growth of Gram-positive bacteria is inhibited by low propolis concentrations (0.4%) whereas Gram-negative bacteria were less susceptible to this substance, the minimal inhibitory concentration ranging from 4.5 to 8.0%. There was no significant difference with regards to the seasonal effect on the survival curve of Staphylococcus aureus and Escherichia coli; after incubation with propolis, there was an efficient antimicrobial action, mainly towards Gram-positive bacteria.

Shaar T.J. et al. *Antimicrobial susceptibility patterns of bacteria at the Makassed General Hospital in Lebanon.* Int J Antimicrob Agents. 2000; 14(2) : 161-4.p Abstract: Bacterial resistance to various antimicrobial agents is most common in areas with high usage of antibiotics such as in countries where over-the-counter availability promotes usage. In Lebanon, information about bacterial resistance to antimicrobial agents is limited. In this study, data on the antimicrobial susceptibility patterns have been collected for the last 7 years in addition to the first 6 months of 1996 at the Makassed General Hospital in Lebanon. Enterobacteriaceae and Pseudomonas species proved to have high but variable rates of multidrug resistance. Among Staphylococcus aureus isolates, 17% were resistant to methicillin. A high percentage of resistance to penicillin (76-88%) was noted among Streptococcus pneumoniae. These resistance patterns were generally comparable with those of other medical centres.

Shah J. et al. *Use of 'locked-in' antibiotic to treat an unusual gram-negative hemodialysis catheter infection.* Nephron. 2000; 85(4) : 348-50.p Abstract: A 37-year-old woman on maintenance hemodialysis for 3 years had multiple vascular access failures due to antiphospholipid

syndrome. She was dialyzed via a tunneled left subclavian catheter, but after 1 year developed chills and fever during each dialysis session. Blood cultures grew out Xanthomonas maltophilia sensitive to ceftazidime and ciprofloxacin. Intravenous administration of both antibiotics failed to eradicate infection. We added 'locked-in' ceftazidime, instilling it daily into the catheter along with heparinized saline for 3 weeks. Within 24 h the patient was dialyzed uneventfully, and all subsequent blood cultures have been negative. This case shows the successful use of a 'locked-in' antibiotic to treat an unusual gram-negative catheter infection. Two prior series have reported similar good results in infections with more common organisms. Such treatment may permit continued use of tunneled hemodialysis catheters for longer periods. Copyright 2000 S. Karger AG, Basel.

Shamsham F. et al. *Fatal left main coronary artery embolism from aortic valve endocarditis following cardiac catheterization.* Catheter Cardiovasc Interv. 2000; 50(1) : 74-7.p Abstract: Coronary artery embolization has been associated with sudden cardiac death. It is more commonly seen with aortic valve endocarditis. It manifests as acute myocardial ischemia or infarction, causing instability of the cardiac rhythm, which may be fatal. We report a patient with aortic valve endocarditis who had sudden cardiac death following coronary angiography. Autopsy revealed embolic occlusion of the left main coronary artery.

Shanahan P.M. et al. *Molecular analysis of and identification of antibiotic resistance genes in clinical isolates of Salmonella typhi from India.* J Clin Microbiol. 1998; 36(6) : 1595-600.p Abstract: A representative sample of 21 Salmonella typhi strains isolated from cultures of blood from patients at the Christian Medical College and Hospital, Vellore, India, were tested for their susceptibilities to various antimicrobial agents. Eleven of the S. typhi strains possessed resistance to chloramphenicol (256 mg/liter), trimethoprim (64 mg/liter), and amoxicillin (>128 mg/liter), while four of the isolates were resistant to each of these agents except for amoxicillin. Six of the isolates were completely sensitive to all of the antimicrobial agents tested. All the S. typhi isolates were susceptible to cephalosporin agents, gentamicin, amoxicillin plus clavulanic acid, and imipenem. The antibiotic resistance determinants in each S. typhi isolate were encoded by one of four plasmid types. Plasmid-mediated antibiotic resistance genes were identified with specific probes in hybridization experiments; the genes responsible for chloramphenicol, trimethoprim, and ampicillin resistance were chloramphenicol acetyltransferase type I, dihydrofolate reductase type VII, and TEM-1 beta-lactamase, respectively. Pulsed-field gel electrophoresis analysis of XbaI-generated genomic restriction fragments identified a single distinct profile (18 DNA fragments) for all of the resistant isolates. In comparison, six profiles, different from each other and from the resistance profile, were recognized among the sensitive isolates. It appears that a single strain containing a plasmid conferring multidrug-resistance has emerged within the S. typhi bacterial population in Vellore and has been able to adapt to and survive the challenge of antibiotics as they are introduced into clinical medicine.

Shankar S. et al. *Image-guided percutaneous drainage of thoracic empyema: can sonography predict the outcome?* Eur Radiol. 2000; 10(3) : 495-9.p Abstract: The aim of this study was to assess the safety and efficacy of image-guided percutaneous catheter drainage (IGPCD) of thoracic empyemas, and to correlate the outcome of IGPCD with the pre-procedural sonographic appearance. One hundred three patients (74 males and 29 females) with thoracic empyema (age range 1 month to 70 years, median age 28 years) underwent IGPCD. In 63 (61.17%) patients, IGPCD was the primary treatment modality; in 40 (38.84%) patients it was used after unsuccessful intercostal chest tube drainage (ICTD). Ultrasound was the main modality used for guidance; CT guidance was used in only 7 patients (6.8%). Eight- to 12-F pigtail catheters or 10- to 14-F Malecot catheters were used. The outcome was correlated with the pre-procedural US appearance (anechoic, complex non-septated or complex septated) of the empyema. The IGPCD technique was successful in 80 of 102 patients. Based on the US appearance, IGPCD was successful in 12 of 13 (92.3%) patients with anechoic empyemas; 53 of 65 (81.54%) patients with complex non-septated empyemas, and in 15 of 24 (62.5%) patients with complex septated empyemas. A statistically significant difference ($p < 0.01$) was seen in the outcome of IGPCD in the three categories. Twenty-two patients required further treatment: ICTD (n = 9; 2 of them later also underwent surgery); and surgery (n = 15). The duration of catheter drainage ranged from 2-60 days. No major complications were encountered. Percutaneous catheter drainage of thoracic empyemas with imaging guidance ensures accurate catheter placement with a high success and a low complication rate. Pre-procedural US can predict the likelihood of success of IGPCD.

Shannon T. et al. *Much ado about nothing: methicillin-resistant Staphylococcus aureus.* J Burn Care Rehabil. 1997; 18(4) : 326-31.p Abstract: The pathogenic methicillin-resistant Staphylococcus aureus (MRSA) has received a voluminous amount of notoriety. The four major reasons are its morbidity, mortality rate, cost of treatment, and constant appearance in intensive care units. Both Staphylococcus aureus and S. epidermidis (MRSE) account for 82% of our gram-positive wound isolates, whereas the gram-negative account for 34% of all isolates. Therefore we compared the morbidity, mortality rate, and cost factors related to MRSA-MRSE and gram-negative infections for a 4-year period, assessing more than 214 documented infections. Morbidity and mortality rates were minor for MRSA. Pseudomonas aeruginosa and Escherichia coli accounted for 57.5% of the total gram-negative isolates. Gram-negative antimicrobial therapy usually requires two therapeutic drugs, which increases morbidity and costs, whereas the staphylococci usually can be treated by one antimicrobial. During this period there were 47 gram-negative infections requiring 10 to 15 additional days of hospital stay, with a daily antibiotic cost of $293.40. Costs for MRSA or MRSE are 28% less. Therefore our preoccupation with MRSA or MRSE infections is unwarranted and unsubstantiated.

Shapiro M. et al. *Cutaneous microenvironment of human immunodeficiency virus (HIV)-seropositive and HIV-seronegative individuals, with special reference to staphylococcus aureus colonization.* J Clin Microbiol. 2000; 38(9) : 3174-8.p Abstract: A cross-sectional quantitative study of cutaneous bacterial and yeast flora at seven body sites in 99 human immunodeficiency virus-seropositive and 50 seronegative military personnel was performed. Statistically significant differences in carriage rates were only observed for Staphylococcus aureus on the foreheads of seropositive individuals. Seronegative individuals demonstrated staphylococcal carriage rates 1.3 to 2 times as great as those of historical controls (defined as healthy individuals not receiving any medications) at five of six body sites. We conclude that seropositive military personnel do not exhibit statistically significant elevations in densities and carriage rates of the microorganisms examined (except Staphylococcus aureus), relative to seronegative individuals. Seropositive individuals may be predisposed to staphylococcal carriage. The elevated staphylococcal carriage rates of military personnel undergoing basic training warrants a formal evaluation of the impact of training exercises on cutaneous flora. The information gained may serve to limit the spread of infection during training exercises and battlefield conditions.

Shaposhnikova I.u.G. et al. *[Nosocomial infections in present-day traumatological-orthopedic hospitals].* Vestn Ross Akad Med Nauk. 1995; (6) : 42-5.p Abstract: Nosocomial infection remains a significant problem in modern traumatology and orthopedics. Staphylococcus prevails in its etiological pattern. The activation of microorganisms such as Acinetobacter is noted. In addition to aerobic microorganisms, anaerobic bacteria, nonsporulating ones, play an important etiological role. Anaerobic infection is seedy in 30.4% of patients' blood samples. Great emphasis is placed on microbial adhesiveness in the pathogenesis of an infectious process. The authors' investigations have shown that highly adhesive Staphylococci are common in severe pathological processes. The adhesiveness of the bacteria has

been shown to depend on environmental conditions and the patient's status. Among the nonsporulating anaerobes there are bacteroids which are most highly adhesive.

Sharma H.S. et al. *Retropharyngeal abscess: recent trends.* Auris Nasus Larynx. 1998; 25(4) : 403-6.p Abstract: Retropharyngeal abscess (RPA) is relatively rare today. A study of 17 cases of RPA treated at our hospital in the past 10 years showed a shift in the disease from children below 6 years of age (41%) to older children and adults (58%). Upper respiratory tract infection (URTI) was found to be the commonest (52%) aetiological predisposing factor in all age groups. Other aetiological factors were septicaemia (11%) in children below the age of 6 years and trauma due to foreign body (35%) in the older children and adult age groups. Klebsiella, Staphylococcus and Streptococcus were the commonest species of microorganisms grown from pus. The changing clinical trends, microbiology, choice of antibiotics, usefulness of radiology, and complications of this potentially fatal illness are discussed.

Sharma S. et al. *Antimicrobial susceptibility pattern & biotyping of Helicobacter pylori isolates from patients with peptic ulcer diseases.* Indian J Med Res. 1995; 102 : 261-6.p Abstract: Antimicrobial susceptibility of 50 local isolates of Helicobacter pylori from patients with acid peptic diseases was investigated to commonly used antibiotics. The maximum resistance was (66%) detected to metronidazole (MIC > 8 micrograms/ml). The frequency of resistance to ampicillin, erythromycin, ciprofloxacin was in the range of 20-28 per cent; least resistance was observed to tetracycline (10%). The gradient disc diffusion method was found to give reproducible results and also correlated with agar dilution method for minimum inhibitory concentration (MIC). Study of the enzymatic activity of H. pylori isolates showed that all isolates had urease, catalase, oxidase, esterase-lipase, and naphthol-AS-beta-1-phosphohydrolase enzymes and were consistently negative for ten other enzymes tested. Majority of the isolates expressed alkaline phosphatase (17/18), esterase (17/18) and acid phosphatase (14/18). The acid phosphatase had the maximum mean enzymatic activity. There was no difference in enzymatic activity between H. pylori isolates from ulcer and gastritis patients. H. pylori isolates could be typed into five biotypes. Type III was found to be more common (44.4%). This study supports the existence of the strain variations among H. pylori on the basis of the enzyme profiles.

Shawar R.M. et al. *Activities of tobramycin and six other antibiotics against Pseudomonas aeruginosa isolates from patients with cystic fibrosis.* Antimicrob Agents Chemother. 1999; 43(12) : 2877-80.p Abstract: The in vitro activity of tobramycin was compared with those of six other antimicrobial agents against 1,240 Pseudomonas aeruginosa isolates collected from 508 patients with cystic fibrosis during pretreatment visits as part of the phase III clinical trials of tobramycin solution for inhalation. The tobramycin MIC at which 50% of isolates are inhibited (MIC(50)) and MIC(90) were 1 and 8 microg/ml, respectively. Tobramycin was the most active drug tested and also showed good activity against isolates resistant to multiple antibiotics. The isolates were less frequently resistant to tobramycin (5.4%) than to ceftazidime (11.1%), aztreonam (11.9%), amikacin (13.1%), ticarcillin (16.7%), gentamicin (19.3%), or ciprofloxacin (20.7%). For all antibiotics tested, nonmucoid isolates were more resistant than mucoid isolates. Of 56 isolates for which the tobramycin MIC was > or = 16 microg/ml and that were investigated for resistance mechanisms, only 7 (12.5%) were shown to possess known aminoglycoside-modifying enzymes; the remaining were presumably resistant by an incompletely understood mechanism often referred to as "impermeability.".

Shay D.K. et al. *Reducing the spread of antimicrobial-resistant microorganisms. Control of vancomycin-resistant enterococci*. Pediatr Clin North Am. 1995; 42(3) : 703-16.p Abstract: Strategies to reduce the spread of hospital-acquired microorganisms resistant to multiple antimicrobial agents are discussed. Because hospitals have experienced a rapid increase in the incidence of infection and colonization with vancomycin-resistant enterococci (VRE) in the past 5 years, the Hospital Infection Control Practices Advisory Committee of the Centers for Disease Control and Prevention has issued recommendations for preventing the spread of vancomycin resistance. Controlling VRE dissemination in pediatric patients requires prompt detection of VRE by microbiology laboratories, education of staff and families about VRE, use of infection control measures to prevent person-to-person VRE transmission, and prudent vancomycin use.

Shay L.E. et al. *The current state of infectious disease: a clinical perspective on antimicrobial resistance.* Lippincotts Prim Care Pract. 1999; 3(1) : 1-15; quiz 16-8.p Abstract: The medical community is in the midst of a wake-up call. No longer can antimicrobial use be taken for granted. The overprescribing of antimicrobials has taken its toll and the consequence has been a precipitous increase in drug-resistant pathogens seen over the last decade. Pharmaceutical companies and researchers are no longer able to keep a step ahead of these resistant pathogens with new antimicrobial agents. The primary care clinician is now faced with complicated treatment issues for many infectious diseases that were once considered uncomplicated. The mechanisms leading to the development of antimicrobial resistance in bacteria is discussed in addition to an overview of the most common drug-resistant pathogens.

Shears P. *Antimicrobial resistance in the tropics.* Trop Doct. 2000; 30(2) : 114-6.p Abstract: Bacterial resistance to antimicrobial agents is an increasing problem in many areas of the tropics. In most countries there is little information available to determine the patterns of resistance in different pathogens, nor are local data available to influence prescribing. This paper will review the development of antimicrobial resistance in the tropics, consider the current priority problems, and suggest strategies that may be taken to improve the surveillance of resistance.

Shears P. et al. *Water sources and environmental transmission of multiply resistant enteric bacteria in rural Bangladesh*. Ann Trop Med Parasitol. 1995; 89(3) : 297-303.p Abstract: The role of different water sources in the spread of multiply resistant enteric bacteria was investigated in rural Bangladesh. The prevalence of resistance to commonly used antimicrobial agents in the faecal flora of village children and the water quality and prevalence of resistance in village water sources were studied. Most of the children studied (81%) had multiply resistant faecal coliform bacteria, i.e. bacteria resistant to at least three antimicrobials. Although tubewells provided water with low faecal coliform counts, 62% of household storage pots contained water with moderate to high counts. Most of the storage pots (76%) and each of the river and pond sites tested contained multiply resistant isolates. Contamination of water within the household, and the widespread distribution of resistant coliforms in the environment, contribute to the high prevalence of multiply resistant enteric flora in the community. These findings are of importance in understanding the spread of multiply resistant enteric pathogens.

Shebuski J.R. et al. *Effects of growth at low water activity on the thermal tolerance of Staphylococcus aureus.* J Food Prot. 2000; 63(9) : 1277-81.p Abstract: Staphylococcus aureus is the most osmotolerant foodborne pathogen, and outbreaks of staphylococcal food poisoning are often linked to foods of reduced water activity (a(w)) values. While it is generally known that the thermal tolerance of microorganisms increases as the a(w) of the heating menstruum is decreased, surprisingly little research has examined the influence of growth medium a(w) on microbial thermal tolerance. In the present study, we show that growth of S. aureus at an a(w) value of 0.94 leads to the development of dramatically enhanced thermal tolerance (i.e., less than 1 log reduction after heating for 20 min at 60 degrees C). We further show that the identity of the accumulated compatible solute within cells grown at low a(w) can also influence the overall level of thermal tolerance of S. aureus. Finally, we provide evidence that the synthesis of general stress and/or osmotic stress proteins is required for

the development of enhanced thermal tolerance of S. aureus at low a(w).

Shelef L.A. et al. *Novel selective and non-selective optical detection of microorganisms.* Lett Appl Microbiol. 1997; 25(3) : 202-6.p Abstract: A new instrument, capable of detecting metabolic changes due to microbiological activity, is described. Optical changes in growth media are monitored in a semi-fluid zone that separates the liquid medium containing the sample. Data demonstrate that common media can be utilized in conjunction with this rapid automated technology. Nutrient broth with the pH dye indicator. bromocresol purple was suitable for total counts. Selective media containing dyes were utilized to assess the presence or absence of specific groups of organisms. Biochemical reactions, such as lysine decarboxylase activity, were identified by the unique generated patterns, and specific enzymatic cleavage reactions with chromogenic substrates, such as 5-bromo-4 chloro-3 indolyl-beta-D-glucuronic acid (X-GLUC), were monitored.

Shen D. et al. *Phenotypic and genotypic characterizations of Chinese strains of Escherichia coli producing extended-spectrum beta-lactamases.* Diagn Microbiol Infect Dis. 1999; 34(3) : 159-64.p Abstract: Twenty-three multi-resistant strains of Escherichia coli were isolated at a single hospital in Beijing, China between January 1997 and May 1998. All isolates produced extended spectrum beta-lactamases (ESBLs) as detected by the double disk synergy test and the Etest ESBL strip (AB BIODISK, Solna Sweden). Additional antimicrobial susceptibility testing showed that most isolates were resistant to gentamicin, tobramycin, tetracycline, trimethoprim/sulfamethoxazole, ciprofloxacin, and cefepime. All isolates remained susceptible to imipenem with MICs of < or = 0.5 microgram/ml. The isolates each produced several beta-lactamases (range 1-4 enzymes/strain) with pI values ranging from 5.2-8.4. Molecular epidemiologic typing revealed four ribotypes and eight pulsed field gel electrophoresis (PFGE) patterns with subgroups among the 23 isolates. Clusters of isolates with the same DNA type were observed as follows (ribotype/PFGE): Wards A (242-5/2, and 242-5/3a), B (242-5/4), and C (880-1/1a). Moreover, similar molecular types were observed in patients from two or more different wards. Further use of isoelectric focusing results and co-resistance patterns produced evidence of potential nosocomial dissemination of strains in only two instances (two identical strains on one ward and two identical strains on different wards). There were also strong similarities in beta-lactamase pIs and co-resistances among many of the strains throughout this medical center. These data document the wide genetic diversity among E. coli producing ESBLs, and a potential for nosocomial spread of these highly resistant organisms requiring increasingly more sophisticated molecular-based techniques and local interventions.

Shenderov B.A. *[Antimicrobial effects of medicines which are not antibiotics].* Antibiot Khimioter. 1997; 42(8) : 26-30.p Abstract: The data on antimicrobial activity of 69 different drugs not belonging to the class of typical antibiotics were examined. It was shown that many of them had antimicrobial activity against enterobacteria susceptible and resistant to antibiotics. Some of such drugs were able to eliminate the property of resistance to antibiotics and in particular that to chloramphenicol and tetracyclines. The data are indicative of the fact that many of the so called nonantibiotics have the capacity of active interference with the human microbial ecology.

Shenoy S. et al. *Value of superficial cultures in diagnosing neonatal sepsis.* Indian J Pediatr. 2000; 67(5) : 337-8.p Abstract: This study was conducted to determine the value of superficial cultures in the diagnosis of neonatal sepsis in our hospital. Sixty three babies, younger than 2 weeks who were admitted with suspected sepsis were investigated. A total of 369 cultures were obtained from these babies—252 (68.29%) superficial and 171 (31.70%) deep cultures. External ear canal swab, umbilical cord swab and throat swab culture accounted for the superficial cultures. Blood culture, cerebrospinal fluid culture and i.v. catheter culture accounted for deep cultures. Of the 369 cultures, 225 (60.97%) were positive for pathogens, which included Staphylococcus aureus, Klebsiella sp, Escherichia coli, Group B streptococcus and Enterococcus fecalis. The yield of pathogenic organisms was higher for superficial cultures (53.84%). All superficial cultures obtained during the study on each patient were simultaneously compared with the deep cultures by antimicrobial sensitivity method. The overall comparison showed that the practice of superficial cultures could be useful to predict the pathogenic organisms causing invasive disease.

Sherertz R.J. et al. *Education of physicians-in-training can decrease the risk for vascular catheter infection.* Ann Intern Med. 2000; 132(8) : 641-8.p Abstract: BACKGROUND: Procedure instruction for physicians-in-training is usually nonstandardized. The authors observed that during insertion of central venous catheters (CVCs), few physicians used full-size sterile drapes (an intervention proven to reduce the risk for CVC-related infection). OBJECTIVE: To improve standardization of infection control practices and techniques during invasive procedures. DESIGN: Nonrandomized pre-post observational trial. SETTING: Six intensive care units and one step-down unit at Wake Forest University Baptist Medical Center, Winston-Salem, North Carolina. PARTICIPANTS: Third-year medical students and physicians completing their first postgraduate year. INTERVENTION: A 1-day course on infection control practices and procedures given in June 1996 and June 1997. MEASUREMENTS: Surveys assessing physician attitudes toward use of sterile techniques during insertion of CVCs were administered during the baseline year and just before, immediately after, and 6 months after the first course. Preintervention and postintervention use of full-size sterile drapes was measured, and surveillance for vascular catheter-related infection was performed. RESULTS: The perceived need for full-size sterile drapes was 22% in the year before the course and 73% 6 months after the course ($P < 0.001$). The perceived need for small sterile towels at the insertion site decreased reciprocally ($P < 0.001$). Documented use of full-size sterile drapes increased from 44% to 65% ($P < 0.001$). The rate of catheter-related infection decreased from 4.51 infections per 1000 patient-days before the first course to 2.92 infections per 1000 patient-days 18 months after the first course (average decrease, 3.23 infections per 1000 patient-days; $P < 0.01$). The estimated cost savings of this 28% decrease was at least $63000 and may have exceeded $800000. CONCLUSIONS: Standardization of infection control practices through a course is a cost-effective way to decrease related adverse outcomes. If these findings can be reproduced, this approach may serve as a model for physicians-in-training.

Sherman D.S. et al. *Fludrocortisone for the treatment of heparin-induced hyperkalemia.* Ann Pharmacother. 2000; 34(5) : 606-10.p Abstract: OBJECTIVE: To report the use of fludrocortisone for heparin-induced hyperkalemia and to briefly review the available literature relating to heparin-induced hyperkalemia. CASE SUMMARY: A 34-year-old African-American man was admitted to the hospital for pneumococcal pneumonia and sepsis. His hospital course was complicated by the development of acute respiratory distress syndrome, severe sepsis, acute renal failure, placement of a tracheostomy, and recurrent nasopharyngeal bleeding. The patient also developed a subclavian vein thrombosis with extension to the cephalic and basilic veins secondary to placement of a pulmonary artery catheter; anticoagulation with heparin was required. On day 9 of heparin therapy, the patient developed symptomatic hyperkalemia refractory to conventional therapies. Oral fludrocortisone 0.1 mg/d was initiated with resolution of the hyperkalemia within 24 hours despite the continued administration of heparin. DATA SOURCES: A MEDLINE (1966-October 1999) search was performed to identify case reports and clinical trials discussing heparin-induced hyperkalemia or the use of fludrocortisone for hyperkalemia. DISCUSSION: Heparin has the potential to induce hyperkalemia by several mechanisms, including decreased aldosterone synthesis, reduction in num-

ber and affinity of aldosterone II receptors, and atrophy of the renal zona glomerulosa. Fludrocortisone promotes potassium excretion by its direct actions on the renal distal tubules. In this patient, fludrocortisone resulted in a significant and rapid decrease in serum potassium even with continued heparin administration and acute renal failure. CONCLUSIONS: This case suggests that fludrocortisone is a reasonable alternative therapy for patients with hyperkalemia secondary to heparin therapy when the continued administration of heparin is necessary.

Shestopalov I.P. et al. *[Effect of heliogeophysical factors on the biological activity of Staphylococcus aureus].* Biofizika. 1997; 42(4) : 919-25.p Abstract: In 1988-89, an experimental was carried out to study the effect of heliogeophysical factors on the biological activity of Staphylococcus aureus, one of the most widespread causative agents of infectious diseases in man and animals. For comparison, both individual heliogeophysical factors and interrelated phenomena in the system Sun-Earth arising from solar flashes were used. Two types of solar flashes were revealed. A near-annual cycle of changes in DNase activity of staphylococci in vitro was revealed, which correlates with the cycle of changes in electron concentration of layer F2 of the ionosphere. The correlation coefficient is 0,96%. It was found that the threshold of susceptibility of test-microorganisms to heliogeophysical influences is different in different years. There is an "amplitude window" of the influence whose upper boundary varies in different periods.

Sheu B.S. et al. *One-week proton pump inhibitor-based triple therapy eradicates residual Helicobacter pylori after failed dual therapy.* J Formos Med Assoc. 1998; 97(4) : 266-70.p Abstract: The purposes of this study were to assess the efficacy of a 1-week proton pump inhibitor (PPI)-based triple therapy after failure of dual therapy in Helicobacter pylori eradication, and to compare the effectiveness of clarithromycin and metronidazole in this regimen. Between January 1996 and March 1997, 67 patients with persistent H. pylori infection after a 2-week course of dual therapy (amoxicillin plus omeprazole) were enrolled. They were randomly assigned to receive amoxicillin (1000 mg twice daily) and omeprazole (20 mg twice daily) plus either metronidazole (500 mg twice daily) or clarithromycin (250 mg twice daily). Endoscopy was performed in each patient to assess the status of H. pylori using the rapid urease test (CLOtest) and the histologic findings before dual therapy, after dual therapy, and after triple therapy. H. pylori isolates were tested for antibiotic resistance when triple therapy failed. The 1-week triple therapy was well tolerated in both groups with no adverse effects severe enough to cause withdrawal from the trial. Residual H. pylori was eradicated in 94% (33/35) of patients in the clarithromycin group and 84% (27/32) in the metronidazole group; the difference was not statistically significant. All seven patients in whom triple therapy failed were infected with metronidazole-resistant isolates and two also had clarithromycin-resistant isolates. This 1-week triple therapy is safe and effective in eradicating residual H. pylori after dual therapy failure. Failure of the rescue regimen is related to antimicrobial agent resistance. Because of the high metronidazole resistance rate in Taiwan, clarithromycin appears to be more promising than metronidazole for the control of H. pylori.

Shi Z.Y. et al. *Antimicrobial susceptibility of clinical isolates of Acinetobacter baumannii.* Diagn Microbiol Infect Dis. 1996; 24(2) : 81-5.p Abstract: The in-vitro activity of 18 antimicrobial agents alone or in combination against 248 clinical isolates of Acinetobacter baumannii from Taiwan were tested by agar dilution. The MIC90S of ampicillin, amoxicillin, piperacillin, cefuroxime, cefotaxime, ceftriaxone, gentamicin, and amikacin were at least 128 mu g/ml. Ceftazidime, cefepime, sulbactam, clavulanic acid, and tazobactam presented moderate activity with MIC90S of 32, 16, 16, 32, and 32 mu g/ml, respectively. The increased activity of ampicillin/sulbactam, amoxicillin/clavulanic acid, and piperacillin/tazobactam was due to the intrinsic effect of sulbactam, clavulanic acid, and tazobactam, respectively. Imipenem, meropenem, and ciprofloxacin were the most active antimicrobial agents with MIC90S of 1, 1, and 0.5 mu g/ml, respectively. Nineteen isolates (7.7%) were resistant to all aminoglycosides and beta-lactam antibiotics, except carbapenems and ciprofloxacin. We are concerned about the multidrug resistance of A. baumannii in this study.

Shibl A.M. et al. *Penicillin-resistant and -intermediate Streptococcus pneumoniae in Saudi Arabia.* J Chemother. 2000; 12(2) : 134-7.p Abstract: The antibiotic susceptibility was analyzed of approximately 400 consecutive isolates of S. pneumoniae isolated from different regions of Saudi Arabia. Most of these isolates were from respiratory (sputum, otitis, 53.8%), blood/CSF (26.3%) and ophthalmic (20%) specimens. Overall 6.2% of the isolates were penicillin-resistant (MICs > or =2 microg/ml) and 51.2% were -intermediate (MICs 0.1-1 microg/ml). The resistance rates to cefuroxime, clarithromycin and ceftriaxone were 14.9%, 14.8% and 4.5% respectively. Only 3.5% of S. pneumoniae showed resistance to amoxycillin/clavulanic acid. The MICs of all tested antibiotics increased as did the penicillin MICs. Penicillin resistance was significantly associated with resistance to cefuroxime ($p<0.001$) but not with the others. These data indicate the presence of penicillin and multiple-resistant pneumococci in Saudi Arabia and that these strains can spread among individuals. A greater awareness with extended indications for microbiological diagnosis, antimicrobial susceptibility testing and restrictive prescription of antibiotics are needed.

Shigei J.T. et al. *Value of terminal subcultures for blood cultures monitored by BACTEC 9240.* J Clin Microbiol. 1995; 33(5) : 1385-8.p Abstract: Blood cultures collected in BACTEC Plus Aerobic/F bottles and BACTEC Plus Anaerobic/F bottles were monitored for 5 days by BACTEC 9240 and subsequent terminal subcultures. Of the 13,471 bottles subcultured, 11.0% (1,477 of 13,471) were culture positive. Of these, 94.0% (1,388 of 1,477) were detected by BACTEC 9240; the additional 6.0% (89 of 1,477) were considered to be false negatives by BACTEC 9240 since they were detected by terminal subculture only. The false-negative bottles consisted of 17 BACTEC Plus Aerobic/F and 72 BACTEC Plus Anaerobic/F bottles, accounting for 2.2 (17 of 786) and 10.4% (72 of 691) of the total positive aerobic and anaerobic bottles, respectively. The positive blood culture bottles most frequently not detected by BACTEC 9240 grew Pseudomonas spp. (24), Staphylococcus spp. (21), and yeasts (24). Of the 86 blood cultures represented by the 89 false-negative bottles, 41 would not have been identified as positive since the other bottle in the blood culture set was either a false negative or a true negative. In general, terminal subcultures of false-negative BACTEC bottles had heavy growth, indicating that BACTEC Plus media were able to support the growth of microorganisms, but the BACTEC 9240 instrument was unable to detect this growth.

Shin K.H. et al. *Nocardia osteomyelitis in a pachymeningitis patient: an example of a difficult case to treat with antimicrobial agents.* Yonsei Med J. 1998; 39(6) : 604-10.p Abstract: Antimicrobial agents played a miraculous role in the treatment of bacterial infections until resistant bacteria became widespread. Besides antimicrobial-resistant bacteria, many factors can influence the cure of infection. Nocardia infection may be a good example which is difficult to cure with antimicrobial agents alone. A 66-year-old man developed soft tissue infection of the right buttock and thigh. He was given prednisolone and azathioprine for pachymeningitis 3 months prior to admission. Despite surgical and antimicrobial treatment (sulfamethoxazole-trimethoprim), the infection spread to the femur and osteomyelitis developed. The case showed that treatment of bacterial infection is not always as successful as was once thought because recent isolates of bacteria are more often resistant to various antimicrobial agents, intracellular parasites are difficult to eliminate even with the active drug in vitro, and infections in some sites such as bone are refractory to treatment especially when the patient is in a compromised state. In conclusion, for the treatment of infections, clinicians need to rely on laboratory tests more than before and have to consider the influence of various host factors.

Shinada K. et al. *[Distribution of Candida species and mutans streptococci related to oral conditions in elderly persons].* Kokubyo Gakkai Zasshi. 1997; 64(4) : 512-7.p Abstract: The purpose of this investigation was to find the relationship between the occurrence of Candida species and mutans streptococci at 7 sites (saliva, tongue, mucosa, teeth, clasp, external, and mucosal denture surfaces) in the mouth of 97 elderly persons (males: 43, age: 76.4 +/- 6.7 years; females: 54, age: 75.0 +/- 6.6 years). Among the subjects, there were complete denture wearers (n = 20), partial denture wearers (n = 45), and non-denture wearers (n = 32). Candida species were more significantly ($p < 0.001$) predominant in complete and partial denture wearers (80% each) than in non-denture (18.8%) wearers. The presence of Candida was highest on the mucosal denture surfaces followed by clasp, tongue, and remaining teeth in that order. Positive correlation were significantly found between the CFU numbers of Candida species and mutans streptococci present on the external surfaces ($p < 0.001$), natural teeth ($p < 0.001$), clasp ($p < 0.01$), and saliva ($p < 0.05$). A negative correlation ($r = -0.503$; $p < 0.001$) was found between the number of teeth and the CFU numbers of Candida species. Moreover, the CFU numbers of both groups of microorganisms also increased in 80-year-old and over persons. Candida species were most predominantly found in persons with poor oral and denture cleanliness.

Shinagawa N. et al. *[Bacteria isolated from surgical infections and its susceptibilities to antimicrobial agents. Special references to bacteria isolated between July 1994 and June 1995].* Jpn J Antibiot. 1996; 49(9) : 849-91.p Abstract: Isolated bacteria from infections in general surgery during the period from July 1994 to June 1995 were investigated by a multicenter study in Japan, and the following results were obtained. One hundred and fifty-three strains were isolated from primary infections, and 143 strains were isolated from postoperative infections. From primary infections, both anaerobic Gram-positive and-negative bacteria were predominant, and from postoperative infections, aerobic Gram-positive bacteria were predominant. Among aerobic Gram-positive bacteria, the isolation rate of Enterococcus faecalis was highest, followed by that of Staphylococcus aureus from both types of infections. Among anaerobic Gram-positive bacteria, the isolation rate of Streptococcus intermedius was highest from primary infections, but from postoperative infections anaerobic Gram-positive bacteria was uncommon. Among aerobic Gram-negative bacteria, Escherichia coli was most predominantly isolated from primary infections, followed by Klebsiella pneumoniae and Pseudomonas aeruginosa in this order. From postoperative infections, P. aeruginosa was most predominantly isolated, followed by Serratia marcescens and E. coli. Among anaerobic Gram-negative bacteria, the isolation rate of Bacteroides fragilis group was the highest from both types of infections. We have noticed that resistant strains against imipenem and ofloxacin were increasing among P. aeruginosa and resistant strains against cefazolin were increasing among E. coli. MICs of cefazolin against four out of 30 strains of E. coli were higher than 100 micrograms/ml, and MICs of imipenem was higher than 50 micrograms/ml against 5 out of 22 strains of P. aeruginosa.

Shindo S. et al. *Rupture of infected pseudoaneurysms in patients with implantable ports for intra-arterial infusion chemotherapy.* J Cardiovasc Surg (Torino). 2000; 41(1) : 95-8.p Abstract: Intra-arterial hepatic chemotherapy via implantable reservoirs is being used increasingly. In our department, five patients have undergone emergency surgery since 1991 because of rupture of an infected pseudo-aneurysm at the site of entry of the catheter. Surgical procedures included removal of the catheter and the reservoir, and closure of the affected artery with or without reconstruction. Of these patients, three (60%) died from uncontrollable sepsis. The poor prognosis emphasizes the need, in patients with carcinoma, for strict aseptic technique and hemostasis at the time of catheter placement, and for careful device maintenance.

Shlaes D.M. et al. *Society for Healthcare Epidemiology of America and Infectious Diseases Society of America Joint Committee on the Prevention of Antimicrobial Resistance: guidelines for the prevention of antimicrobial resistance in hospitals.* Clin Infect Dis. 1997; 25(3) : 584-99.p Abstract: Antimicrobial resistance results in increased morbidity, mortality, and costs of health care. Prevention of the emergence of resistance and the dissemination of resistant microorganisms will reduce these adverse effects and their attendant costs. Appropriate antimicrobial stewardship that includes optimal selection, dose, and duration of treatment, as well as control of antibiotic use, will prevent or slow the emergence of resistance among microorganisms. A comprehensively applied infection control program will interdict the dissemination of resistant strains.

Shlaes D.M. et al. *Society for Healthcare Epidemiology of America and Infectious Diseases Society of America Joint Committee on the Prevention of Antimicrobial Resistance: guidelines for the prevention of antimicrobial resistance in hospitals.* Infect Control Hosp Epidemiol. 1997; 18(4) : 275-91.p Abstract: Antimicrobial resistance results in increased morbidity, mortality, and costs of health care. Prevention of the emergence of resistance and the dissemination of resistant microorganisms will reduce these adverse effects and their attendant costs. Appropriate antimicrobial stewardship that includes optimal selection, dose, and duration of treatment, as well as control of antibiotic use, will prevent or slow the emergence of resistance among microorganisms. A comprehensively applied infection control program will interdict the dissemination of resistant strains.

Shopova E. *[The appearance of ciprofloxacin resistance in the microbial strains isolated from gynecologic patients].* Akush Ginekol (Sofiia). 1997; 36(1) : 14-6.p Abstract: The sensitivity of 415 microbial strains isolated from clinically taken samples from gynecologically diseased women was determined. The urine strains showed sensitivity up to 93.3%, but 7 Gram/-/ strains isolated in the last 3 months of the study were resistant to Ciprofloxacin. The cervical secretion strains, those of CD aspirates, of IUP and wound secretions were found sensitive up to 81.2%. The 50 Enterococcus strains isolated in gynecological infections were found in 28% resistant to Ciprofloxacin, with 7 of the 19 resistant strains were isolated in the last 3 months of the study. The appearance of resistant strains in some microbial species, pointed out in the literature as markedly sensitivity to Ciprofloxacin, as well as the data of a fast developed resistance Ciprofloxacin in the course of treatment, allowed us to recommend their application in the infections caused by microorganisms resistant to the habitual antibiotics.

Shopova E. *[A direct microscopic preparation of the gastric aspirate is an aid in the diagnosis of congenital neonatal infection].* Akush Ginekol (Sofiia). 1996; 35(3) : 17-9.p Abstract: The date of direct microscopic preparation (DMP) from gastric aspirate were compared with microbiological investigations of the same gastric aspirate, the ear secretion, blood culture in 112 newborn premature babies, on the day of their birth. A negative (-) DMP (without leucocytes and microorganisms) completely coincided with negative (-) cultures in 94 babies. Correspondence between the data of DMP (more than 4 leucocytes on field and present of microorganisms) and the isolated microbial species from the gastric aspirate, ear secretions and blood-culture was found in 18 babies. The most frequently isolated microbial species in our investigation were—Streptococcus group B, srt. gr. D, S. aureus, E. coli, C. albicans. The DMP of gastric aspirate from the newborn proved to be a valuable diagnostic method, which gives the possibility of the clinician for a fast information concerning the condition of the baby in the first hours after birth.

Shopova E. et al. *[Streptococcus group B isolated in 3 microscopic displays from the vaginal secretions of pregnant women].* Akush Ginekol (Sofiia). 1999; 38(2) : 21-3.p Abstract: Over a period of 20 months we investigated 1366 vaginal specimens from pregnant women for GBS (group B streptococci) carrier in three microscopic patterns, evaluated by Nugent score system. More frequently we isolated GBS in

group I intermedia (score 4-6)—20.8%, (when Lactobacillus spp. is missing—67.4%, without or associated with other nonanaerobic microorganisms (60.5%). All isolated GBS strains showed sensitivity to ampicillin and carbenicillin. Good sensitivity was found to cefazolin (92.4%) ant to cefuroxim (94.9%). The strains showed 13.7% resistance to erythromycin and 4.1% to clindamycin.

Shore K.P. et al. *Susceptibility of anaerobic bacteria in Auckland: 1991-1996.* N Z Med J. 1999; 112(1099) : 424-6.p Abstract: AIM: To determine the antimicrobial susceptibility of local anaerobic bacteria. METHOD: The antimicrobial susceptibility of 357 obligate anaerobes collected between 1991 and 1997 was determined by a standard agar dilution method. Isolates tested included Bacteroides spp. 131, Fusobacterium spp. 12, Prevotella spp. 13, Veillonella spp. 5, Clostridium perfringens 27, other Clostridium spp. 29, Propionibacterium spp. 57, Actinomyces spp. 7, other non-sporing gram-positive bacilli 28 and Peptostreptococcus spp. 48. Ten antimicrobials were tested: penicillin, amoxycillin/ clavulanic acid, pipercillin/tazobactam, ceftriaxone, cefoxitin, cefotetan, imipenem, meropenem, clindamycin and metronidazole. RESULTS: Imipenem, pipercillin/tazobactam, meropenem and amoxycillin/clavulanic acid were active against virtually all anaerobes tested. Metronidazole was active against all anaerobic gram-negative bacteria and Clostridium spp., but had variable activity against other anaerobes. Cefoxitin was the most active cephalosporin against Bacteroides spp., with 76%, 64% and 15% of Bacteroides spp. being susceptible to cefoxitin, cefotetan and ceftriaxone, respectively. Penicillin had poor activity against anaerobic gram negative bacilli. Actinomyces and Propionibacterium spp. were susceptible to all antimicrobials tested except metronidazole. Variable results were obtained with other antimicrobial-organism combinations. Comparison of results with data from a previously published survey showed little change in susceptibility except for increased resistance of Bacteroides fragilis to ceftriaxone and Clostridium species (not C perfringens) to clindamycin. CONCLUSION: Our results update the local susceptibility profile of anaerobic bacteria and may be considered when choosing an antimicrobial agent for prophylaxis or treatment of anaerobic infections.

Shulman M.S. et al. *An anteromedial internal jugular vein successfully cannulated using the assistance of ultrasonography.* J Clin Anesth. 2000; 12(1) : 83-6.p Abstract : The internal jugular vein usually is found either lateral or anterolateral to the carotid artery when it is cannulated for central vein access using external anatomical landmarks. We report a case in which the carotid artery was inadvertently punctured, but the right internal jugular vein could not be found. We used ultrasonic guidance to determine that the right internal jugular vein was anteromedial to the carotid artery. A figure showing the ultrasound of this rare anatomical variation is provided. The advantages and utility of ultrasound when used for the placement of internal jugular central vein catheters are reviewed.

Sicinschi L. *[The antibiotic susceptibility of Campylobacter strains isolated in Moldova. The possibilities for estimation and the results].* Bacteriol Virusol Parazitol Epidemiol. 1996; 41(3-4) : 123-9.p Abstract: Susceptibility to antibiotics of 39 Campylobacter jejuni/coli strains was appreciated using the modified disc method (sowing by loop). Eighteen strains were examined in duplicate using the conventional disc susceptibility method (sowing by inundation). Based on the diameters (mm) of growth inhibition zones and on the respective critical concentrations (mcg/ml) the MICs were also appreciated. All the strains were resistant to rifampicin, polymyxin M sulphate, ketokonazole, cephalotin, cephazolin; most of the strains were resistant to carbenicillin, one third to ampicillin and almost one fifth to polymyxin E. These findings enable us to recommend these antibiotics (excepted penicillins) as ingredients for the selective media for Campylobacter isolation. All the strains were sensible to ciprofloxacine and chloramphenicol; most of the strains were sensible to doxicicline, to tetracycline and to Nalidixic acid. Three strains were appreciated as intermediate sensible to cephotaxime, two strains to erythromycin and one strain to clindamycin. These antimicrobial agents were recommended in the treatment of the campylobacterioses according to the susceptibility testing results of each isolated strain. All strains were also sensible to gentamycin, kanamycin, streptomycin and tobramycin. Although the results of both technical variants were comparable the conventional disc method was more precise and seems to be better for MICs appreciation. The MICs (90%) of ampicillin, cephotaxime, erythromycin, colistin and metronidazole exceeded slightly the respective standard data. The MICs for the rest of the antibiotics were lower than the accepted international concentrations.

Sidorenko S.V. et al. *[Characterization of antimicrobial properties of cefpirome].* Antibiot Khimioter. 1996; 41(12) : 7-13.p Abstract: The results of a multicentre investigation of antibiotic susceptibility in 800 clinical isolates were analyzed. The levels of susceptibility to cefpirome and other antibiotics in gram-negative organisms with inducable production of chromosomal beta-lactamases (Enterobacter, Serratia, Citrobacter and others) were compared and the advantages of cefpirome over other cephalosporins were shown: 89 per cent of the susceptible strains against 58 to 78 per cent. With respect to other microorganisms the advantages of cefpirome were less pronounced.

Sidorenko S.V. et al. *[Mechanisms of resistance to quinolones and current level of sensitivity of clinically important microorganisms to ofloxacin].* Antibiot Khimioter. 1996; 41(9) : 33-8.p Abstract: The data on the mechanisms of microbial resistance to fluoroquinolones are presented. Comparison of the susceptibility levels of the microorganisms isolated on the territory of Russia showed that among the gram-negative opportunistic isolates 84 per cent was susceptible to ofloxacin, 45 per cent to ampicillin/sulbactam, 70 per cent to cefotaxime, 80 per cent to ceftazidime, 85 per cent to amikacin and 62 per cent to gentamicin. Among the Salmonella, Shigella and Vibrio cholerae isolates no strains were resistant to ofloxacin. Among the Salmonella isolates from patients more than 30 per cent was resistant to ampicillin, chloramphenicol, trimethoprim/sulmethoxasole and tetracycline. Among the Salmonella isolates 65 to 90 per cent was resistant to the antibiotics. Among the V.cholerae isolates 59 per cent was resistant to trimethoprim/sulmethoxasole.

Sieger B. et al. *Empiric treatment of hospital-acquired lower respiratory tract infections with meropenem or ceftazidime with tobramycin: a randomized study. Meropenem Lower Respiratory Infection Group.* Crit Care Med. 1997; 25(10) : 1663-70.p Abstract: OBJECTIVE: To evaluate the efficacy and tolerability of intravenous empiric treatment with meropenem compared with ceftazidime-tobramycin in patients with hospital-acquired lower respiratory tract infections. DESIGN: Prospective, nonblind, randomized trial. SETTING: Multicenter trial conducted at 22 centers. PATIENTS: Two hundred eleven patients were enrolled and 121 were evaluable for the analysis of both clinical and bacteriologic efficacy. INTERVENTIONS: One hundred four patients were randomized to receive intravenous meropenem (1000 mg) every 8 hrs and 107 patients were randomized to receive intravenous ceftazidime (2000 mg) plus tobramycin (1 mg/kg) every 8 hrs. Sixty-three meropenem-treated patients and 58 ceftazidime-tobramycin-treated patients were eligible for the analysis of clinical and bacteriologic efficacy. In the ceftazidime-tobramycin group, 32 (55%) evaluable patients received more than six doses of tobramycin, 24 (41%) received six doses or fewer, and two (3%) did not receive any tobramycin. MEASUREMENTS AND MAIN RESULTS: The analysis of efficacy was based on the clinical and bacteriologic responses at the end of treatment. Satisfactory clinical responses occurred in 56 (89%) of 63 of the meropenem-treated patients and in 42 (72%) of 58 of the ceftazidime-tobramycin-treated patients (p =.04). Corresponding bacteriologic response rates were 89% and 67%, respectively (p =.006). The frequency and profile of drug-related adverse events was similar across treatment groups. Seizures were reported in three

meropenem-treated patients, but these seizures were considered by the investigator to be unrelated to treatment. CONCLUSIONS: Meropenem is well tolerated and more efficacious than the combination of ceftazidime and tobramycin for the initial empiric treatment of hospital-acquired bacterial pneumonia.

Sierra L.I. et al. *Correlación de las pruebas de susceptibilidad a la caries: recuento de estreptococos del grupo "mutans" y capacidad amortiguadora salivar en niños escolares de 9 a 11 años en Caldas, Antioquia, Colombia.* Rev. fac. odontol. univ. Antioquia. 1995; 6(2) : 21-7.p Abstract: En el presente trabajo estudiamos en 195 niños de 9 a 11 años, del municipio de Caldas, Antioquia, la correlación de los índices clínicos de caries y el recuento de Estreptococos del grupo "mutans" (Sm) y capacidad amortiguadora salivar. En estudios paralelos en esta misma población se estudiaron las correlaciones con el recuento de lactobacilos y de Cándida, y la ingesta de sacarosa (Sierra LI, Estrada MS, y col., 1995; Sierra LI, Uscategui R y col., 1995). Esta población que no tiene flúor en el agua, ha tenido programas preventivos y de topicaciones, tiene un índice alto de caries (CO,s 13.6), una higiene bucal (HO) regular (IP 1.35). La mayoría de la población tenía Estreptococos del grupo "mutans" (Sm) (92.35 por ciento). La gran dispersión de los resultados es mostrada por una desviación de 368 x 107UFC/ml. La gran mayoría de la muestra presentó capacidad amortiguadora alta (5.95) (dada por pH final). Menos del 25 por ciento tenían capacidad amortiguadora de 5 o menos; y por lo menos el 25 por ciento de los estudiantes mostraron capacidad amortiguadora de más de 6.75. En hombres fue de 6.01 y de 5.44 en mujeres, siendo estadísticamente significativa la diferencia (p=0.007). Aunque no fue significativa la diferencia, las niñas tuvieron menos presencia de caries (CO,s) que los niños (11.6 y 13.9). El Co,s con las únicas variables que mostró una correlación lineal fue con el recuento de SM (r=0.34 alfa=0.00) y correlación negativa con la capacidad amortiguadora (r=0.19 alfa=0.0079). La asociación encontrada en la muestra total entre las variables CO,s y Sm es similar con los hombres (r=0.30 =0.0001), pero en las mujeres ambas están más fuertemente asociadas (r=0.67 alfa =0.005). En el grupo de menor caries (cuartil 1: CO,s menor de 6.5) no se muestra ninguna asociación lineal entre las variables. En el grupo de mayor caries (CO,s mayor de 19, cuartil 3) esta variable sólo muestra asociación con Estreptococos del grupo "mutans" (Sm) (r=0.3695 alfa=0.0009). En este grupo se muestra una buena relación entre Sm y HO (r=0.435 alfa=0.0018). Correlacionando los resultados con estudios paralelos, el consumo de sacarosa mostró tendencia a asociarse con recuentos de Estreptococos del grupo "mutans" (AU).

Sietses C. et al. *The influence of laparoscopic surgery on postoperative polymorphonuclear leukocyte function.* Surg Endosc. 2000; 14(9) : 812-6.p Abstract: BACKGROUND: Laparoscopic surgery is thought to result in a better preservation of patients' immunological defenses. Polymorphonuclear leukocytes (PMN) are the most important effector cells in the elimination of pathogenic microorganisms. Because little is known about their function after laparoscopic surgery, we studied PMN phagocytosis, antigen expression, and oxygen radical production. METHODS: In this study, 17 patients scheduled for Nissen fundoplication were randomly assigned to undergo either a laparoscopic or conventional procedure. To study phagocytic capacity, PMN were incubated with fluorescein isothiocyanate (FITC)-labeled Staphylococcus aureus. Plasma opsonic capacity was measured by comparing PMN phagocytosis in the presence of patients' own plasma with phagocytosis in the presence of control plasma. Cellular activation was measured by the expression of various cell surface markers and by assessment of PMA-stimulated oxidative burst. RESULTS: Phagocytosis by PMN in the presence of patients' plasma was significantly lower 2 h after the conventional operation. No decrease in phagocytosis was observed when control plasma was used, indicating a decreased opsonic capacity of plasma after conventional surgery. No changes were observed after laparoscopic surgery. Furthermore, CD11b expression was significantly lower after the laparoscopic approach, indicating a blunted cellular activation. A significantly lower PMA-stimulated oxidative burst further confirmed the tempered stimulation after laparoscopic surgery. CONCLUSIONS: Laparoscopic surgery results in a preservation of the plasma opsonic capacity, and thereby the ability of PMN to phagocytose bacteria. Moreover, the postoperative cellular activation is reduced. The preserved phagocytosis and the blunted activation may prevent the development of postoperative infectious complications.

Sifuentes-Osornio J. et al. *Antimicrobial susceptibility patterns and high-level gentamicin resistance among enterococci isolated in a Mexican tertiary care center.* Rev Invest Clin. 1996; 48(2) : 91-6.p Abstract: AIM. To describe the antimicrobial susceptibility pattern of enterococcal clinical isolates. SETTING. A 200-bed tertiary-care center in Mexico City. STUDY DESIGN. Prospective surveillance of enterococcal clinical isolates identified according to Facklam's method since 1990. Susceptibility tests were performed by a commercial micromethod, agar diffusion and microbroth dilution. We present data from 1990 to 1992. RESULTS. A total of 407 enterococci were recovered during the study period: 245 from inpatients and 162 from outpatients; 325 of the isolates were Enterococcus faecalis, 61 E. faecium, seven E. avium, four each for E. raffinosus and, E. hirae; two, E. pseudoavium; and one each E. gallinarum, E. durans; E. mundtii, and E. faecales var asacharolyticus. Resistance to ampicillin and imipenem among E. faecium was 59%. Among E. faecalis, 0.3% were resistant to ampicillin and 2% to imipenem; no beta-lactamase production was detected. All were susceptible to vancomycin. Overall, a 12% high-level gentamicin resistance (HLGR) was found without a difference between species; 25% of bloodstream clinical isolates were HLGR enterococci. More than half (63%) of the HLGR clinical isolates were susceptible to streptomycin; a-hemolysis in human blood agar as well as nitrofurantoin resistance were observed in all E. faecium isolates and in two E. avium. CONCLUSIONS. In our center, HLGR has a prevalence of 12%. Streptomycin may be a therapeutic alternative in 63% of the HLGR cases. The pattern of hemolysis in human blood agar plus the susceptibility to nitrofurantoin could be used as an initial screening to identify enterococci.

Sifuentes-Osornio J. et al. *[Resistance of Mycobacterium tuberculosis in Mexican patients. I. Clinical features and risk factors].* Rev Invest Clin. 1995; 47(4) : 273-81.p Abstract: OBJECTIVE. To determine the clinical manifestations associated with resistant M. tuberculosis infection and the antimicrobial resistance in isolates from Mexican patients. STUDY DESIGN. Epidemiological surveillance. PATIENTS. Tuberculosis confirmed cases. METHODS. Primary resistance: no history of treatment prior to diagnosis. The following critical concentrations (micrograms/mL) were used for susceptibility: isoniazid 0.2 and 1; rifampin 1 and 5; ethambutol 5 and 10; streptomycin 2 and 10; ethionamide 5; kanamycin 6; and para-aminosalicylic acid (PAS) 2 and 10. RESULTS. Eighty-four patients with a mean age of 44.7 years were included; 54 men (64%) and 30 women (36%); most patients were from the Mexico City metropolitan area. In 34 patients there was clinical information available, 26 presented fever and weight loss and 8 respiratory symptoms. Fifty-nine patients (70%) were infected by pan-susceptible M. tuberculosis, and 25 (30%) by a resistant isolate; 17 (68%) of them were resistant to at least two drugs, 16 (64%) to isoniazid and rifampin. The proportion of resistance was: isoniazid 24%, rifampin 19%, streptomycin 12%, ethambutol 10%, PAS 9%, etionamide 7%, and kanamycin 6%. Of 47 patients without previous treatment, eight had a resistant microorganism (17%): 9% resistant to isoniazid, 6% to rifampin, 2% to streptomycin, 6% to PAS and 6% multiresistant. Of 37 patients with history of previous treatment for tuberculosis, 17 (46%) had a resistant isolate; 44% were resistant to isoniazid, 35% to rifampin, 24% to streptomycin, 19% to ethambutol, 12% to PAS and 35% multiresistant. Of the 84 patients, four were physicians infected by a resistant isolate, and seven HIV-infected patients, one with a multiresistant isolate, and another with isoniazid resistance. CONCLUSIONS.

Antimicrobial resistance among M. tuberculosis is alarmingly high in Mexico City; these results emphasize the importance of case detection and early isolation of patients.

Siganos C.S. et al. *Microbial findings in suture erosion after penetrating keratoplasty.* Ophthalmology. 1997; 104(3) : 513-6.p Abstract: PURPOSE: The purpose of the study was to evaluate the presence of microorganisms in eroded (broken or loose) sutures post-penetrating keratoplasty (PKP). METHODS: Fifty-five consecutive episodes of eroded 10-0 nylon sutures post-PKP in 35 eyes were evaluated. Eroded sutures were removed and, along with a swab from the conjunctiva, studied for aerobic and anaerobic bacteria. Preoperative diagnosis, elapsed time since surgery, presence of symptoms, suture location, infiltration, vascularization, and mucous at the suture site were recorded. Student's t test was used for statistical analysis. RESULTS: The average time from PKP to suture removal was 31.6 months. Eyes treated with topical steroids presented earlier suture erosions (P = 0.05). Of the 55 sutures, 34 were sterile, and in 21, both Staphylococcus epidermidis and diphtheroids (mixed flora) were cultured. Of the 55 conjunctivas, 32 were sterile, 22 showed mixed flora, and 1 had Pseudomonas. Sutures eroded for more than 24 hours had more positive cultures than those eroded for 24 hours or less (P = 0.043). Sutures located superiorly had fewer positive cultures than did those in the palpebral fissure area (P = 0.044). Eyes with repeated suture erosions had more culture-positive sutures (P = 0.017) and conjuctivas (P = 0.014) at the first erosion in comparison with the second erosion. Infiltration, vascularization, or muscus at the suture site did not correlate with positive cultures. CONCLUSIONS: Bacteria are encountered at the site of eroded sutures. Patients with PKP should report symptoms immediately, and eroded sutures should be removed as early as possible.

Silva J. et al. *[Antimicrobial resistance of different Acinetobacter baumannii biotypes isolated in the northern region of Chile].* Rev Med Chil. 1999; 127(8) : 926-34.p Abstract: BACKGROUND: Acinetobacter baumannii nosocomial outbreaks are common and the microorganism is frequently resistant to multiple antimicrobials. There is little information about Acinetobacter baumannii antimicrobial susceptibility in the northern region of Chile. AIM: To identify different Acinetobacter baumannii biotypes isolated from clinical samples and to determine their antimicrobial susceptibility. MATERIAL AND METHODS: One hundred twenty three Acinetobacter baumannii isolates were studied. The identification and typing of Acinetobacter baumannii was based on phenotypic characteristics. Antimicrobial susceptibility was investigated using agar dilution techniques. RESULTS: Most Acinetobacter baumannii strains were isolated from wounds, urinary and respiratory infections. Seven biotypes were isolated, being biotype 9 the most frequent. Imipenem was the antimicrobial with the higher activity against the microorganism. Amikacin, cefoperazonesulbactam, ampicillinsulbactam and ceftazidime had a moderate activity. There were high resistance levels to ampicillin and older cephalosporins. CONCLUSIONS: Acinetobacter baumannii is emerging as a significant nosocomial pathogen in Chile and shows high resistance rates to multiple antibiotics.

Silva O. et al. *Antimicrobial activity of Guinea-Bissau traditional remedies.* J Ethnopharmacol. 1996; 50(1) : 55-9.p Abstract: The ethanolic extracts of twelve plants selected through ethnomedical survey in Guinea-Bissau were investigated for their in vitro antimicrobial properties over ten bacteria and Candida albicans, using agar diffusion and dilution methods. All the tested extracts showed some activity against at least one of the bacteria. Most of the extracts (79%) showed activity against Staphylococcus aureus and only one (Cryptolepis sanguinolenta) against Escherichia coli. Cryptolepis sanguinolenta and Terminalia macroptera root extracts showed some activity against Candida albicans as well as showing an interesting profile of activity against most of the enteropathogen microorganisms. Inhibition zones against Staphylococcus aureus were localised on extract chromatograms by bioautographic techniques.

Silva O. et al. *Antimicrobial activity of Terminalia macroptera root.* J Ethnopharmacol. 1997; 57(3) : 203-7.p Abstract: Terminalia macroptera Guill et Perr. (Combretaceae) is a medicinal plant used in Guinea-Bissau and other West African countries to treat infectious diseases. The ethanol extract from T. macroptera decorticated root and their liquid-liquid partition fractions, were screened for antimicrobial activity, by the twofold serial microdilution assay against seven reference bacterial strains and against Candida albicans. The extract and fractions showed some activity against at least one of the test microorganisms. The best results were obtained against Shigella dysenteriae and Vibrio cholerae. The minimum inhibitory concentrations (MIC) of T. macroptera ethanol extract were also determined for about 100 clinical strains of Campylobacter sp., Escherichia coli, Salmonella sp., Shigella sp. and Vibrio cholerae. The ethanol extract activity against Campylobacter strains is similar to co-trimoxazole, higher than sulfamethoxazole but lower than tetracycline, erythromycin, ampicillin and streptomycin. Ellagitannins are the major compounds in the extract and active fractions. The obtained results suggest a potential importance of this medicinal plant in the treatment of enteric diseases, particularly in Campylobacter infections.

Silverman J. et al. *Epidemiologic evaluation of antimicrobial resistance in community-acquired enterococci.* J Clin Microbiol. 1998; 36(3) : 830-2.p Abstract: Fecal samples from 200 consecutive patients admitted to a community hospital yielded 107 enterococci. High-level gentamicin resistance occurred in 10 (14%) of the Enterococcus faecalis isolates. Ampicillin resistance occurred in two (3%) of the E. faecalis isolates and six (23%) of the Enterococcus faecium isolates. There were no vancomycin-resistant enterococci. Risk factors for enterococci with high-level aminoglycoside (gentamicin) or ampicillin resistance included prior hospitalization and previous antibiotic use.

Silvestri L. et al. *Selective decontamination of the digestive tract: a life saver.* J Hosp Infect. 2000; 45(3) : 185-90.p Abstract: Selective decontamination of the digestive tract (SDD), a strategy designed to prevent or minimize the impact of infection by potentially pathogenic micro-organisms in critically ill patients requiring long-term mechanical ventilation, comprises four component protocols, aiming to control the three types of infection occurring in such cases: (i) a parenteral antibiotic, cefotaxime, administered for a few days to prevent primary endogenous infections typically occurring 'early'; (ii) the topical antimicrobials polymyxin E, tobramycin and amphotericin B employed throughout the stay in the intensive care unit to prevent secondary endogenous infections tending to develop 'late'; (iii) a high standard of hygiene to prevent exogenous infections that may occur throughout the stay in the intensive care unit; (iv) surveillance samples of throat and rectum to distinguish between these three types of infection, to monitor the compliance and the efficacy of the treatment, and to detect the emergence of resistance at an early stage. A recent, rigorous, meta-analysis examining 33 randomized SDD trials involving 5727 patients demonstrated a significant reduction in overall mortality (20%) and in the incidence of respiratory tract infections (65%); conclusive evidence that SDD saves the lives of critically ill patients and confirmation that SDD is now an evidence based medicine manoeuvre. This same meta-analysis found no instance of the emergence of resistance or of associated superinfections and/or outbreaks in any of the 33 studies during a period extending upwards of 10 years. By the criterion of cost-per-survivor, four recent randomized trials showed that patient survival is improved more cheaply by employing SDD than by the traditional approaches.

Simango C. et al. *Penicillin resistant Streptococcus pneumoniae isolates in Harare, Zimbabwe.* Cent Afr J Med. 1999; 45(4) : 100-2.p Abstract: OBJECTIVE: To determine the susceptibility of Streptococcus pneumoniae isolates to penicillin and other antimicrobial drugs. DESIGN: This was a laboratory based study. SETTING: Department of Medical Laboratory Sciences, University of Zimbabwe and the

Bacteriology Unit, Public Health Laboratories, Harare. SUBJECTS: 71 S. pneumoniae isolates from Parirenyatwa and Harare hospitals. MAIN OUTCOME MEASURES: Penicillin resistance, MIC of penicillin to S. pneumoniae, multi-drug resistance. RESULTS: 71 S. pneumoniae isolates were tested for their susceptibilities to penicillin G, erythromycin, tetracycline, ampicillin, ciprofloxacin and clindamycin. Five (7%) of the isolates were resistant to penicillin G and were also all resistant to erythromycin. Isolates resistant to other antibiotics were; tetracycline (4), ampicillin (3) and ciprofloxacin (2). The five isolates that were resistant to penicillin G showed resistance to two or more antibiotics. Four S. pneumoniae isolates were designated highly resistant to penicillin (MIC > or = 2 micrograms/ml) and one isolate was designated intermediate in resistance to penicillin (MIC between 0.1 and 1.0 microgram/ml). CONCLUSIONS: A low percentage of S. pneumoniae isolates were resistant to penicillin and were also resistant to erythromycin. The penicillin resistant strains showed multi-drug resistance.

Simango C. et al. *Campylobacter enteritis in children in an urban community.* Cent Afr J Med. 1997; 43(6) : 172-5.p Abstract: OBJECTIVE: To determine the prevalence of Campylobacter species as aetiologic agents of diarrhoea and its antimicrobial susceptibility pattern. DESIGN: This was a laboratory based cross sectional study on the cause of childhood diarrhoea. SETTING: Department of Medical Laboratory Technology, Medical School in Harare. SUBJECTS: Children less than five years old with diarrhoea presenting at primary level health centres in Harare. MAIN OUTCOME MEASURES: Patient's age, culture results, antimicrobial susceptibility pattern. RESULTS: Campylobacter species had the highest isolation rate (9.3%) of all the bacterial and parasitic enteric pathogens which were sought in the stool specimens. Children less than three years old were those most frequently infected with Campylobacter species. Campylobacter jejuni was the commonest Campylobacter species isolated. All the Campylobacter isolates were sensitive to chloramphenicol and norfloxacin. A significant number of the isolates (14.8%) showed multidrug resistance to erythromycin, tetracycline and gentamicin. CONCLUSIONS: Campylobacter species are important causative agents of childhood diarrhoea. The age group affected most in the urban area is older than the age group in rural areas. Campylobacter jejuni is more important in causing diarrhoea than other Campylobacter species. There is a high rate of multi-drug resistance by Campylobacter species.

Simberkoff M.S. et al. *Prevention of community-acquired and nosocomial pneumonia.* Curr Opin Pulm Med. 1996; 2(3) : 228-35.p Abstract: Pneumonia is an important cause of morbidity and mortality in the United States. The provision of effective prophylaxis for pneumonia has become a major goal for both public health officials and individual physicians. Prophylaxis for community-acquired pneumonia is pathogen-specific and is directed toward the most common microorganisms that cause it. The 23-valent pneumococcal polysaccharide vaccine; the trivalent influenza vaccine; the Haemophilus b conjugate vaccine; and either trimethoprim-sulfamethoxazole, dapsone, or aerosolized pentamidine are recommended to prevent Streptococcus pneumoniae, influenza viruses, H. influenzae type b, and Pneumocystis carinii respectively. Except for the microorganisms listed above, the prevention of nosocomial pneumonia is not pathogen-specific. Rather, prevention of nosocomial pneumonia requires the use of infection control procedures, including patient and staff education; isolation of patients with highly contagious respiratory pathogens; vigorous hand washing; cleaning and sterilizaton of respiratory equipment; and use of sterile water in nebulizers and humidifiers. It also requires procedures to limit pooling and aspiration of secretions, such as positioning and rotation of the bed-bound patient; frequent suctioning of respiratory secretions using gloves and sterile suction catheters; and limiting enteral alimentation. Finally, selective decontamination of the digestive tract may be considered for intubated patients.

Simiyu K.W. et al. *Toxin production and antimicrobial resistance of Escherichia coli river water isolates.* East Afr Med J. 1998; 75(12) : 699-702.p Abstract: OBJECTIVES: To establish the types of E. coli isolates that are found in river water around Nairobi and to assess the potential risk of use of this water to human health. DESIGN: Multiple stratified sampling was carried out. Surface sampling was used in the entire study. SETTING: The study was carried out on river waters surrounding Nairobi, Kenya. SUBJECTS: Forty Escherichia coli strains isolated from river water. MAIN OUTCOME MEASURES: Serotyping, toxin gene tests and susceptibility to tetracyclines, ampicillin, chloramphenicol and kanamycin were analysed. RESULTS: None of the isolates could be specifically serotyped using the available antisera. Toxin gene production tests using the colony hybridisation technique revealed that nine (22.5%) of the strains were positive for heat stable (ST) toxin, seven (17.5%) to the heat labile (LT) toxin and two (5%) to both. Using the Agar Disk Diffusion technique, eighty per cent of the strains were susceptible to all four antibiotics, while twenty per cent of the strains showed multiple resistance. None of the strains was resistant to all four antibiotics while no strain showed resistance to kanamycin. CONCLUSION: None of the E. coli isolates was serotypable and it was therefore not possible to determine whether serologically identical strains of ETEC were haboured by man or animals. Toxin gene tests results showed that there is some risk of infection by diarrhoea causing ETEC to man and animals. Toxin gene tests results showed that there is some risk of infection by diarrhoea causing ETEC to man and animals if they consume this water untreated and there is evidence to show resistance of bacteria to antibiotics, hence appropriate health measures should be adhered to.

Simon A. et al. *[Surveillance of nosocomial infections: prospective study in a pediatric intensive care unit. Background, patients and methods].* Klin Padiatr. 2000; 212(1) : 2-9.p Abstract: BACKGROUND, PATIENTS AND METHODS: From November 1997 through May 1998, the incidence of nosocomial infections was studied prospectively in a 10-bed multidisciplinary pediatric intensive care unit in Germany. A standardized surveillance [SEKI] system based on the National Nosocomial Infection Surveillance [NNIS] System of the Centers for Disease Control and Prevention [CDC] was used. The CDC definitions for nosocomial infections were adapted to the current practice of pediatric intensive care in Germany. Infection rates were calculated as infections per 100 patients, per 1000 patient-days, and per 1000 device-days (central venous catheters, urinary-catheters, and mechanical ventilation). RESULTS: Fifteen nosocomial infections were recorded in 201 patients during 1035 patient-days. The overall nosocomial infection rates were 7.5/100 patients and 14.5/1000 patient-days. Device-associated nosocomial infection rates for urinary-catheters and mechanical ventilation were 7.2/1000 utilization-days and thus below the 75th percentile of the last NNIS report. Central line infection rates were 10.7/1000 utilization days and therefore above the 75th percentile of the NNIS data (10.2/1000). The median length-of-stay was 5.1 days. CONCLUSIONS: Surveillance data are indispensable for internal and external quality control, and prospective surveillance of nosocomial infections should become an essential component of hospital infection control programs in pediatric intensive care in Germany. The standardized calculation of (device utilization ratios and) device-specific infection rates yields results which can be compared with national and international surveillance data. SEKI meets the criteria of a practice oriented, prospective and standardized surveillance system. Considerable efforts for collecting and interpreting the required data should be balanced against the benefit of prevention of nosocomial infections in this population of critically ill persons.

Simon D. et al. *Antibiotic selection for patients with septic shock.* Crit Care Clin. 2000; 16(2) : 215-31.p Abstract: Early recognition of the sepsis syndrome, prompt administration of broad-spectrum antibiotics, surgical intervention when indicated, and aggressive supportive care in intensive care units remain the therapeutic strategies for

patients with sepsis. Antibiotic selection is based on many factors including the most probable source of infection, the most likely pathogens, and knowledge of antibiotic susceptibility patterns for community- and hospital-acquired infections. Unfortunately, with this approach, mortality remains unacceptably high. Adjuvant therapies such as antiendotoxin antibodies, cytokine antagonists, and anti-inflammatory agents aimed at blunting the host immune response to bacterial infection have provided little clinical benefit to date. As our understanding of the pathophysiology of sepsis progresses, perhaps newer modalities will improve clinical outcome. At this time, preventive strategies, including optimal vaccine use, effective infection control practices, judicious use and care of intravascular lines and indwelling urinary catheters, and appropriate use of anti-infective agents to prevent microbial resistance should be used to decrease the incidence of infection and subsequent sepsis.

Simon M.R. et al. *Esophageal candidiasis as a complication of inhaled corticosteroids.* Ann Allergy Asthma Immunol. 1997; 79(4) : 333-8.p Abstract: BACKGROUND: Oropharyngeal candidiasis is a well-described side effect of inhaled corticosteroids. Nevertheless, few cases of esophageal candidiasis have been reported. OBJECTIVE: To present a patient with esophageal candidiasis associated with inhaled corticosteroids. METHODS: Case report. RESULTS: Our patient is a 70-year-old white woman with a 20-year history of intrinsic asthma, well controlled on triamcinolone acetonide 400 micrograms, ipratropium bromide 36 micrograms, and pirbuterol acetate 400 micrograms, each inhaled four times daily. She reported no oral steroid use for > 4 years and that she always rinsed her mouth following triamcinolone acetonide inhalation. The patient had gastritis with peptic ulcer disease in the past and developed worsening dyspeptic pain and heartburn. Following discontinuation of cimetidine and initiation of ranitidine without improvement, esophagogastroduodenoscopy was performed. Several small white patches in the mid and distal esophagus could not be removed with pressure. A biopsy confirmed the diagnosis of candidal esophagitis. Following a 4-week course of fluconazole, the patient was clinically improved and follow-up esophagogastroduodenoscopy was normal. There was no evidence of underlying cellular immunosuppression, malignancy, or diabetes mellitus and no history of recent antibiotic usage. Delayed skin tests revealed 5 x 5 mm induration to dermatophytin. Delayed hypersensitivity to Candida and mumps tests was absent. There was strong in vitro lymphocyte transformation and a positive immediate skin test response to Candida. ELISA for human immunodeficiency virus was negative. T and B cell counts were normal with CD4 = 630/mm3, CD8 = 520/mm3, and absolute B cell = 120/mm3. It is possible that this patient's immediate hypersensitivity response to Candida suppressed her delayed response. Candidal esophagitis is a rare, yet important, complication of inhaled corticosteroid use. CONCLUSION: Immunocompetent patients on inhaled corticosteroids with medically unresponsive symptoms of esophagitis should be investigated for esophageal candidiasis.

Simonetti D'Arca A.S. et al. *[A new device for the disinfection of handpieces and turbines].* Minerva Stomatol. 1995; 44(7-8) : 369-75.p Abstract: Dental handpieces are often difficult to disinfect. This is one of the main reasons for the considerable risk of cross-infections in dental offices. The aim of the present study was the evaluation of the disinfectant property of a recent, commercially available, automatic instrument, described as capable to clean, disinfect and lubricate dental handpieces. The following experimental evaluations were made: 1) antimicrobial activity of the disinfectant (glyoxalaldehyde) used. The method described by the European Committee for Standardization was followed. Test microorganisms were Pseudomonas aeruginosa and Staphylococcus aureus. 2) disinfection of dental handpieces (69 contra-angles and 97 turbines of different marks). They were naturally infected using them on patients for 30 minutes at least. 3) disinfection of dental handpieces infected with bacterial suspensions of Staphylococcus aureus, Streptococcus pyogenes (beta-haemolyticus, group A), Candida albicans and Pseudomonas aeruginosa. The results of the first experiment showed a strong bactericidal power of the disinfectant with both the tested strains, after a contact time of only 1 minute. A great proportion of the dental handpieces tested during the second experiment were found disinfected: from 84% through 89% out of the various models of turbine handpieces; from 89% through 100% out of the models of contra-angle handpieces. Even though bacterial contamination level was low (about 10(3) microorganisms per handpiece), a satisfactory disinfectant ability in natural conditions was found. The results of the third experiment were unclear. The tested instrument reduced 10(5)-10(8) times the original bacterial count when the gram positive microorganisms (Staphylococcus aureus, Streptococcus pyogenes) were used. On the other hand, when Pseudomonas aeruginosa and Candida albicans were used, the results were different: the bacterial count was reduced 10(6)-10(7) times in some cases, and only 10(2) times in other cases. This difference was found in the tests made using the same attachment and in those made using various attachments. In conclusion, the tested instrument showed, in most cases, a good disinfectant property, but the presence of unclear results suggests that some technical modifications are required.

Simonetti N. et al. *Overcoming Streptococcus agalactiae in vitro resistance to imidazoles.* J Chemother. 1997; 9(4) : 251-6.p Abstract: The increased diffusion of Streptococcus agalactiae in the urinary tract and vagina has affected the strain's resistance to antimicrobial agents, so we decided to study the possibility of overcoming its resistance to imidazoles. Our data suggest that overcoming S. agalactiae resistance to imidazoles in contact and growth culture tests depends partly on the electrical conductivity of the culture medium. Although imidazole contact activity and culture activity have different targets in cell structures, we have demonstrated that imidazole resistance in S. agalactiae cells in both types of tests can be affected by the same conditions regulating membrane permeability.

Simor A.E. et al. *Canadian national survey of prevalence of antimicrobial resistance among clinical isolates of Streptococcus pneumoniae. Canadian Bacterial Surveillance Network.* Antimicrob Agents Chemother. 1996; 40(9) : 2190-3.p Abstract: The antimicrobial susceptibilities of 1,089 clinical isolates of Streptococcus pneumoniae obtained from 39 laboratories across Canada between October 1994 and August 1995 were determined. A total of 91 isolates (8.4%) demonstrated intermediate resistance (MIC, 0.1 to 1.0 microgram/ml) and 36 (3.3%) had high-level resistance (MIC, > or = 2.0 micrograms/ml) to penicillin. Penicillin-resistant strains were more likely to have been recovered from normally sterile sites (P = 0.005) and to be cross-resistant to several beta-lactam and non-beta-lactam antimicrobial agents (P < 0.05). These results indicate that there has been a recent significant increase in the prevalence of antibiotic-resistant S. pneumoniae in Canada.

Sinci V. et al. *Long-term effects of combined iliac dilatation and distal arterial surgery.* Int Surg. 2000; 85(1) : 13-7.p Abstract: PURPOSE: When standard aortofemoral surgical procedure is combined with lower extremity vascular surgery, problems related with the hospital stay, morbidity, mortality and the cost of treatment will exist. The number of reports relating to combined iliac artery PTA and distal bypass surgery is limited. After the development of stenting procedures, the results of arterial system plasty have much more improved. This report reviews our preliminary experience with iliac artery angioplasty with distal bypass procedures. PATIENTS AND METHODS: A total of 41 patients have undergone combined iliac artery dilatation and distal arterial revascularization. Angioplastic procedures were performed in the angiography suite and distal surgery was carried out at the same day or the day after. Of all patients, 29 underwent percutaneous transluminal angioplasty (PTA) and 12 underwent combined PTA and stent placement. Ipsilateral femoropopliteal bypass was performed as a distal revascularization procedure in all patients. RESULTS: Mean systolic iliac artery pres-

sure gradients improved from 34.7+/-8.6 mmHg to 3.9+/-3.2 mmHg after angioplastic procedures (P < 0.0001). Six patients needed reangioplasty because of restenosis in the follow-up period. Thrombectomy was performed on 1 patient in the early postoperative period and re-do femoropopliteal bypass was performed on two patients in the 2nd and 23rd months. Three minor wound infections were successfully treated with antibiotics and local care. Mean follow-up was 21.4 months (range 1-48 months). By life-table analyses, the overall 4-year cumulative primary patency of combined procedures was 78.1%. CONCLUSION: The results show that the combined procedure is a suitable method for the treatment of patients with multiple stenotic lesions at the iliac and distal arterial levels. We believe that the combined use of PTA and distal vascular surgery by an experienced surgical team will give beneficial results and a highly satisfactory outcome in this group of patients.

Singh J. et al. *Of bugs and drugs. A guide through the labyrinth of antimicrobial therapy for respiratory tract infections.* Postgrad Med. 1999; 106(6) : 47-54; quiz 252.p Abstract: Choosing appropriate antimicrobial therapy is no longer a simple process. Even for the common problems of respiratory tract disease in children and adults, selection is complicated by both increasing microbial resistance and the daunting number of extended-spectrum antibiotics now on the market. In this article, Drs Singh and Arrieta look at the problem from all aspects and give their specific recommendations.

Singh N. et al. *Methicillin-resistant Staphylococcus aureus: the other emerging resistant gram-positive coccus among liver transplant recipients.* Clin Infect Dis. 2000; 30(2) : 322-7.p Abstract: We undertook a study of the characteristics and clinical impact of infections due to methicillin-resistant Staphylococcus aureus (MRSA) after liver transplantation. Of 165 patients who received liver transplants at our institution from 1990 through 1998, 38 (23%) developed MRSA infections. The predominant sources of infection were vascular catheters (39%; n=15), wound (18%; n=7), abdomen (18%; n=7), and lung (13%; n=5). A significant increase in MRSA infections (as a percentage of transplant patients infected per year) occurred over time (P=.0001). This increase was greater among intensive care unit patients (P=.001) than among nonintensive care unit hospital patients (P=.17). Cytomegalovirus seronegativity (P=.01) and primary cytomegalovirus infection were significantly associated with MRSA infections (P=.005). Thirty-day mortality among patients with MRSA infections was 21% (8/38). Mortality was 86% in patients with bacteremic MRSA pneumonia or abdominal infection and 6% in those with catheter-related bacteremia (P=.004). Thus the incidence of MRSA infection has increased exponentially among our liver transplant recipients since 1990. These infections have unique risk factors, time of onset, and a significant difference in site-specific mortality; deep-seated bacteremic infections, in particular, portend a grave outcome.

Singh N. et al. *Predicting bacteremia and bacteremic mortality in liver transplant recipients.* Liver Transpl. 2000; 6(1) : 54-61.p Abstract: Predictors of bacteremia and mortality in bacteremic liver transplant recipients were prospectively assessed. One hundred eleven consecutive episodes of fever or infections were documented in 59 patients over a 4-year period. Forty-nine percent (29 of 59 patients) of the patients had bacteremia, 39% (23 of 59 patients) had nonbacteremic infections, and 12% (7 of 59 patients) had fever of noninfectious cause. Primary (catheter-related) bacteremia (31%; 9 of 29 patients), pneumonia (24%; 7 of 29 patients), abdominal and/or biliary infections (14%; 4 of 29 patients), and wound infections (10%; 3 of 29 patients) were the predominant sources of bacteremia. Diabetes mellitus (odds ratio, 6.9; P =.03) and serum albumin level less than 3.0 mg/dL (odds ratio, 0.14; P =.02) were independently significant predictors of bacteremia compared with nonbacteremic infections. Mortality at 14 days was 28% (8 of 29 patients) in those with bacteremia compared with 4% (1 of 23 patients) in those with nonbacteremic infections and 0% (0 of 7) in patients with fever of noninfectious cause (P =.03). Intensive care unit stay at the time of bacteremia (100% v 47%; P =.005), absence of chills (0% v 53%; P =.005), lower temperature at the onset of bacteremia (99.2 degrees F v 101.5 degrees F; P =.009), lower maximum temperature during the course of bacteremia (99.3 degrees F v 102 degrees F, P =.008), greater serum bilirubin level (7.6 v 1.5 mg/dL; P =.024), presence of abnormal blood pressure (80% v 16%; P =. 0013), and greater prothrombin time (15.6 v 13.3 seconds; P =.013) were significantly predictive of greater mortality in the bacteremic patients. These data have implications for discerning the likelihood of bacteremia and initiation of empiric antibiotics pending cultures. Lack of febrile response in bacteremic liver transplant recipients portended a poorer outcome.

Singh N. et al. *Short-course empiric antibiotic therapy for patients with pulmonary infiltrates in the intensive care unit. A proposed solution for indiscriminate antibiotic prescription*. Am J Respir Crit Care Med. 2000; 162(2 Pt 1) : 505-11.p Abstract: Inappropriate antibiotic use for pulmonary infiltrates is common in the intensive care unit (ICU). We sought to devise an approach that would minimize unnecessary antibiotic use, recognizing that a gold standard for the diagnosis of nosocomial pneumonia does not exist. In a randomized trial, clinical pulmonary infection score (CPIS) (Pugin, J., R. Auckenthaler, N. Mili, J. P. Janssens, R. D. Lew, and P. M. Suter. Diagnosis of ventilator-associated pneumonia by bacteriologic analysis of bronchoscopic and nonbronchoscopic "blind" bronchoalveolar lavage fluid. Am. Rev. Respir. Dis. 1991;143: 1121-1129) was used as operational criteria for decision-making regarding antibiotic therapy. Patients with CPIS </= 6 (implying low likelihood of pneumonia) were randomized to receive either standard therapy (choice and duration of antibiotics at the discretion of physicians) or ciprofloxacin monotherapy with reevaluation at 3 d; ciprofloxacin was discontinued if CPIS remained </= 6 at 3 d. Antibiotics were continued beyond 3 d in 90% (38 of 42) of the patients in the standard as therapy compared with 28% (11 of 39) in the experimental therapy group (p = 0.0001). In patients in whom CPIS remained </= 6 at the 3 d evaluation point, antibiotics were still continued in 96% (24 of 25) in the standard therapy group but in 0% (0 of 25) of the patients in the experimental therapy group (p = 0.0001). Mortality and length of ICU stay did not differ despite a shorter duration (p = 0.0001) and lower cost (p = 0.003) of antimicrobial therapy in the experimental as compared with the standard therapy arm. Antimicrobial resistance, or superinfections, or both, developed in 15% (5 of 37) of the patients in the experimental versus 35% (14 of 37) of the patients in the standard therapy group (p = 0.017). Thus, overtreatment with antibiotics is widely prevalent, but unnecessary in most patients with pulmonary infiltrates in the ICU. The operational criteria used, regardless of the precise definition of pneumonia, accurately identified patients with pulmonary infiltrates for whom monotherapy with a short course of antibiotics was appropriate. Such an approach led to significantly lower antimicrobial therapy costs, antimicrobial resistance, and superinfections without adversely affecting the length of stay or mortality.

Singh N. et al. *Rational empiric antibiotic prescription in the ICU.* Chest. 2000; 117(5) : 1496-9.p Abstract: The prescribing of antibiotics in the ICU is usually empiric, given the critical nature of the conditions of patients hospitalized there. Appropriate antibiotic utilization in this setting is crucial not only in ensuring an optimal outcome, but in curtailing the emergence of resistance and containing costs. We propose that research in the ICUs is vitally important in guiding antibiotic prescription practices and, therefore, the achievement of above-stated goals. There is wide institutional diversity in the relative prevalence of predominant pathogens and their antimicrobial susceptibilities, and within individual ICUs there exist unique patient populations with varying risks for and susceptibilities to infections and specific pathogens. Appropriate antibiotic prescription practices should be formulated based on surveillance studies and research at individual ICUs; these goals can be accomplished utilizing existing resources.

Singh S. et al. *Reconstruction of the superior vena cava with the aid of an extraluminal venovenous jugulo-atrial shunt*. Tex Heart Inst J. 2000; 27(1) : 38-42.p Abstract: A 57-year-old woman had chronic benign superior vena cava syndrome related to the long-term use of multiple central venous catheters for chemotherapy. Treatment included resection of the obstructed segment and repair of the superior vena cava with an autologous pericardial patch. Intraoperatively, return venous flow was maintained with an extraluminal venovenous jugulo-atrial shunt. The shunt relieved upper-body hypertension and congestion, resulting in early extubation and a short, smooth postoperative course.

Sinha B. et al. *Heterologously expressed staphylococcus aureus fibronectin-binding proteins are sufficient for invasion of host cells.* Infect Immun. 2000; 68(12) : 6871-8.p Abstract: Staphylococcus aureus invasion of mammalian cells, including epithelial, endothelial, and fibroblastic cells, critically depends on fibronectin bridging between S. aureus fibronectin-binding proteins (FnBPs) and the host fibronectin receptor integrin alpha(5)beta(1) (B. Sinha et al., Cell. Microbiol. 1:101-117, 1999). However, it is unknown whether this mechanism is sufficient for S. aureus invasion. To address this question, various S. aureus adhesins (FnBPA, FnBPB, and clumping factor [ClfA]) were expressed in Staphylococcus carnosus and Lactococcus lactis subsp. cremoris. Both noninvasive gram-positive microorganisms are genetically distinct from S. aureus, lack any known S. aureus surface protein, and do not bind fibronectin. Transformants of S. carnosus and L. lactis harboring plasmids coding for various S. aureus surface proteins (FnBPA, FnBPB, and ClfA) functionally expressed adhesins (as determined by bacterial clumping in plasma, specific latex agglutination, Western ligand blotting, and binding to immobilized and soluble fibronectin). FnBPA or FnBPB but not of ClfA conferred invasiveness to S. carnosus and L. lactis. Invasion of 293 cells by transformants was comparable to that of strongly invasive S. aureus strain Cowan 1. Binding of soluble and immobilized fibronectin paralleled invasiveness, demonstrating that the amount of accessible surface FnBPs is rate limiting. Thus, S. aureus FnBPs confer invasiveness to noninvasive, apathogenic gram-positive cocci. Furthermore, FnBP-coated polystyrene beads were internalized by 293 cells, demonstrating that FnBPs are sufficient for invasion of host cells without the need for (S. aureus-specific) coreceptors.

Sinisaari I. et al. *Metallic or absorbable implants for ankle fractures: a comparative study of infections in 3,111 cases.* Acta Orthop Scand. 1996; 67(1) : 16-8.p Abstract: Absorbable fracture fixation has been in clinical use since 1984. Our study compares the infection rates and some infection parameters between metallic (2073 patients) and absorbable fracture fixation devices (1012 patients) in displaced ankle fractures. The infection rate associated with metallic fixation was 4.1%, compared with 3.2% absorbable fixation (p 0.3). The patients who had a wound infection were older when metallic fixation was used (p 0.01). They also had a bi- or trimalleolar fracture more often than did patients treated with absorbable fracture fixation, but this difference did not have a significant effect on the wound infection rate (p 0.2). The infections were mostly caused by microorganisms of the Staphylococcus species. Deep infections were equally common with both fixation methods (0.4%), but there was some variation in the bacterial spectrum.

Siri Arce M.T. et al. *Actividad comparativa in vitro de eritromicina, azitromicina, claritromicina, roxitromicina, ciprofloxacina y amoxicilina frente a neisseria gonorroeae.* Rev. chil. infectología. 1995; 12(3) : 169-72.p Abstract: El tratamiento antimicrobiano de las enfermedades por transmisión sexual debe ser combinado ya que coexiste más de un agente microbiano. Los nuevos macrólidos azálicos podrían ser activos frente a la mayoría de los agentes y resolver el problema con un solo antimicrobiano. Se estudiaron 100 cepas de neisseria gonorrhoeae, ciprofloxacino fue la droga más activa (CIM 90= 0,015 mcg/ml). El 20 por ciento de las cepas fueron productoras de betalactamasa. De los macrólidos azalicos azitomicina fue el más activo (CIM 90= 0,25 mcg/ml) (AU).

Sirinavin S. et al. *Effect of antibiotic order form guiding rational use of expensive drugs on cost containment*. Southeast Asian J Trop Med Public Health. 1998; 29(3) : 636-42.p Abstract: New injectable antimicrobial agents are generally costly and broad-spectrum. Overusage results in unnecessary economic loss and multi-drug resistant organisms. Effective strategies for decreasing costs without compromising patient care are required. This study aimed to evaluate the economic impact of a system using an antimicrobial order form to assist rational usage of expensive antimicrobial agents. The study was performed during 1988-1996 at a 900-bed, tertiary-care, medical school hospital in Bangkok. The target drugs were 3 costly, broad-spectrum antibacterial drugs, namely imipenem, vancomycin, and injectable ciprofloxacin. The restriction of these 3 drugs was started in 1992 and was extended to netilmicin and ceftazidime in 1995. A filled antimicrobial order form (AOF) was required by pharmacists before dispensing the drugs. The AOF guided the physicians to give explicit information about anatomic diagnosis, etiologic diagnosis, and suspected antimicrobial resistance patterns of the organisms. It also contained information about indications of the restricted drugs. The filled forms were audited daily during working days by the chairman of The Hospital Antibiotic Committee. Feedback was given to the prescribers by infectious disease specialists at least twice a week. The strategy was endorsed by the executive committee of the hospital. Impact of AOF without endorsement, audit and feedback, was evaluated in 1996. The expenditures of the drugs were adjusted to the average admitted patient-days per fiscal year of the study period. The system with endorsement was well accepted and could be maintained for 4 years. The adjusted expenditures per year of the 3 restricted antibiotics were 1.41-1.87 million baht less (22-29%) in 1992-1994 than the pre-intervention year 1991. The cost reduction of imipenem and injectable ciprofloxacin could also be maintained for 1995 but not vancomycin for which use increased. The costs of these 3 restricted drugs increased very sharply (69%) in 1996 when there was loss of endorsement and capacity to perform auditing and feed back by infectious disease specialists. The system did not work with ceftazidime which was commonly used for febrile neutropenia and nosocomial infections.

Sirvent J.M. et al. *Tracheal colonisation within 24 h of intubation in patients with head trauma: risk factor for developing early-onset ventilator-associated pneumonia*. Intensive Care Med. 2000; 26(9) : 1369-72.p Abstract: OBJECTIVE: To investigate if tracheal colonisation within 24 h of intubation is a risk factor for developing early-onset ventilator-associated pneumonia (EP) in patients with head trauma. DESIGN: A prospective study in an intensive care unit of a university hospital. POPULATION: One hundred intubated patients were included with head trauma and Glasgow coma score at admission < or =12. METHODS: We took tracheal aspirate samples within 24 h of intubationand performed a protected bronchoalveolar mini-lavage when clinical diagnosis of pneumonia was made. MEASUREMENTS AND RESULTS: On admission time 68 patients (68%) were colonised in trachea, 22 patients were colonised by Staphylococcus aureus, 20 by Haemophilus influenzae, six by Streptococcus pneumoniae and 20 by gram-negative bacilli. The incidence of EP was 26%, and the microorganisms involved were Staph. aureus (44%), H. influenzae (31%), Strep. pneumoniae (12%), and gram-negative bacilli (13%). A multivariate logistic regression analysis showed that the tracheal colonization by Staph. aureus, H. influenzae or Strep. pneumoniae within 24 h of intubation was an independent risk factor for developing EP (odds ratio: 28.9; 95% confidence interval: 1.59-52.5). CONCLUSION: Colonisation of the trachea within 24 h of intubation by Staphylococcus aureus, Haemophilus influenzae or Streptococcus pneumoniae is a risk factor for developing EP in patients with head trauma.

Skala L.Z. et al. *[A comparative study of the effectiveness of commercial microtest systems for identification of microorganisms of different groups in clinical microbiology]*. Klin Lab Diagn. 1996; (5) : 35-9.p Abstract: Studies of 806 strains of cultures isolated from pathological material demonstrated the

possibility of using microtest systems MMTE1 and 2 (ALLERGEN Research and Production Plant in the town of Stavropol) and ENTEROtest 1 and 2 and ENTEROtest 16 for identification of enterobacteria and NEFERMtest, STAPHYtest, STREPTOtest, and ANAEROtest for the identification of respective groups of microorganisms at practical microbiological laboratories (Lachema, Czechia). The microtest kits are easy to use and fit for mass screenings; they permit simultaneous testing in 9 to 23 biochemical tests. Use of these test kits allows species identification of 63.3 to 80.7% cultures making use of biochemical activity tables and indexes recommended in instructions for the use of microtest kits and 85.6 to 96.1% cultures making use of IDENT computer software. Introduction of microtest kits in the practical activity of microbiological laboratories will appreciably improve the quality of microbiological investigations and allow the use of automated microbiological systems.

Skerrett S.J. *Diagnostic testing to establish a microbial cause is helpful in the management of community-acquired pneumonia.* Semin Respir Infect. 1997; 12(4) : 308-21.p Abstract: Antibiotic treatment for community-acquired pneumonia (CAP) can be specifically directed at an identified etiologic agent, or empirically formulated based on consideration of the likely pathogens according to the patient's age, underlying diseases, and clinical presentation. In recent years the empirical approach has become increasingly popular, and there is a growing trend away from efforts to make a microbiological diagnosis. This article reviews the tests that are currently available for the diagnosis of CAP, including stains, cultures, antigen-detection techniques, nucleic acid amplification, and serologies. Arguments then are presented in support of efforts to make a microbiological diagnosis. Clinical and radiographic features of CAP are not sufficiently distinctive to infer a specific microbial cause. Identification of the etiologic agent can be made in the majority of cases, and most microbiological diagnoses can be made rapidly with simple tests. The best opportunity to make an etiologic diagnosis is before antibiotics are administered. Identification of the microbial cause of pneumonia permits specific, narrow-spectrum antibiotic treatment that may be more effective, less toxic, and less expensive than empiric therapy. Microbiological data from individual patients contributes to understanding the local microbial epidemiology of CAP, including the local distribution of pathogens and their antimicrobial resistance patterns, information that is invaluable in the construction and modification of empiric treatment regimens. The reliance on empiric treatment engenders a false complacency, based on the erroneous assumption that broad-spectrum antibiotics will treat all cases of CAP. The unnecessary use of broad-spectrum antibiotic combinations in the empiric treatment of CAP contributes to the growing problem of antimicrobial resistance.

Skiest D.J. et al. *Peripherally inserted central catheters in patients with AIDS are associated with a low infection rate.* Clin Infect Dis. 2000; 30(6) : 949-52.p Abstract: We reviewed the medical records of all human immunodeficiency virus (HIV)-infected patients who had a peripherally inserted central catheter (PICC) placed during a 1-year period. Ninety-seven PICCs were inserted in 66 patients for 8337 catheter-days. Eighty of 97 catheters were used primarily to treat cytomegalovirus disease. The mean time to any complication was 150 days. The total complication rate was 6.1 per 1000 catheter-days. The total infection rate was 1. 3 per 1000 catheter-days, and the serious infection rate was 0.8 per 1000 catheter-days. The mean time to a serious infection was 310 days. The noninfectious complication rate was 4.6 per 1000 catheter-days. PICCs were associated with a low infection rate and a moderate mechanical complication rate, which compare favorably with historical rates seen in AIDS patients with other types of central venous access devices. PICCs are a reasonable alternative to other central venous access devices in patients with HIV or AIDS.

Skrypal' I.H. et al. *[The phenotypic traits of Mollicutes as their possible phylogenetic markers].* Mikrobiol Z. 1995; 57(3) : 3-8.p Abstract: Interaction of cells of mollicutes Acholeplasma laidlawii PG 8, A. laidlawii var. granulum 18, Mycoplasma hominis PG 21, M. pneumoniae FH, M. fermentans PG 118 and their extracellular products with different carbohydrates, plant lectins of different carbohydrate specificity with glycocalix carbohydrates of the same microorganisms has been studied. Basing on this study and data from literature a conclusion is made that such phenotypical characteristics as the ability to form extracellular fructose-1.6-diphosphate specific lectin and N-acetylneuraminic acid as the end sugar in the composition of carbohydrates of mollicute glycocalyx can serve a phylogenetic marker. These markers indicate the possible origin of mollicutes from bacteria of the group Bacillus-Lactobacillus-Streptococcus as a result of degenerative evolution and are their rather stable characteristics. Such marker as extracellular lectin specific to fructoso-1.6-diphosphate which is formed by phytopathogenic mollicute A. laidlawii var. granulum, 118 evidences that in spite of genetic affinity of this "yellow" agent of cereals with A. laidlawii, it does not descend from the last ancestor directly, but they probably have some general ancestor. We do not know yet this ancestor which is a link in the evolution chain of acholeplasmas in the process of their origin from the mentioned group of bacteria. It is supposed that these markers together with such known phylogenetic markers as lactate dehydrogenase which is activated by fructoso-1.6-diphosphate, and aldolases and glycolipids with specific properties can additionally evidence for the origin of mollicutes and their affinity to certain groups of microorganisms.

Skull S. et al. *Streptococcus pneumoniae antibiotic resistance in Northern Territory children in day care.* J Paediatr Child Health. 1999; 35(5) : 466-71.p Abstract: BACKGROUND: There is evidence that the rapid rise in Streptococcus pneumoniae (SP) antimicrobial resistance seen in other countries may have commenced in Australia. Streptococcus pneumoniae carriage and resistance levels are described for urban Northern Territory children in day care. METHODS: A prospective cohort study was conducted of 250 children in nine Darwin day care centres between 24 March and 15 September 1997. Each fortnight nasopharyngeal swabs were collected from children, and parents were interviewed about medications administered. RESULTS: Streptococcus pneumoniae was detected in 52% (1028/1974) of all nasopharyngeal swabs. Streptococcus pneumoniae was isolated from 92% (231/250) of children at some time. Penicillin resistance was found in 30% (312/1028) of isolates using a screening test. Of these, 256 (82%) had resistance confirmed by E-test. Two hundred and one (20% of all isolates) had intermediate penicillin resistance and 55 (5% of all isolates) had high level resistance. Ceftriaxone resistance was found in 19% of children's first isolates. Resistance to other antibiotics was also common: co-trimoxazole 45%, erythromycin 17%, tetracycline 17% and chloramphenicol 13%. A total of 17% (172/1028) of the isolates were multiresistant. The average fortnightly proportion of children given antibiotics was 16% (405/2476). CONCLUSION: Levels of intermediate and high level penicillin resistance in this day care population are consistent with previous data from the Northern Territory, and considerably higher than the rest of Australia. The national trend of increasing pencillin resistance is likely to continue.

Skull S.A. et al. *Investigation of a cluster of Staphylococcus aureus invasive infection in the top end of the Northern Territory.* Aust N Z J Med. 1999; 29(1) : 66-72.p Abstract: INTRODUCTION: Staphylococcus aureus invasive infection remains a serious condition associated with considerable morbidity and mortality. Following notification of five cases at Royal Darwin Hospital (RDH), we searched for related cases, determined their epidemiological characteristics and attempted to identify the source of this apparent cluster. METHODS: We reviewed RDH microbiology records between June 1996 and April 1997 for S. aureus isolates with similar antibiograms to notified cases. We used antibiotic resistance patterns, bacteriophage typing and two molecular typing techniques to subtype implicated isolates. Hospital records were reviewed for admission details and associated costs were

estimated. RESULTS: Fifty-four cluster-related isolates occurred in 47 separate presentations. The peak incidence was in the wet season. The most important risk factor for staphylococcal invasive infection was the presence of skin sores/scabies in 17/54 cases (31%), followed by intravascular line use in 14/54 (26%), open trauma in 11/54 (20%), underlying end stage renal failure and alcoholism each in ten of 54 (18%). The mean admission length was 30 days and antibiotics were given for an average of 23 days. Death due to S. aureus infection occurred in eight of 47 (17%) presentations. S. aureus pneumonia was community acquired in 12/13 patients (92%) and six of 13 (46%) died. Ten of 13 (80%) pneumonia patients had at least one other focus of S. aureus infection. The cost of antibiotics and hospital bed per presentation was approximately $16,000. Presentations with skin sores/scabies cost considerably more ($31,000). No common epidemiologic features were found for community or hospital acquired cases. CONCLUSION: Considerable mortality and cost was attributable to cases of S. aureus invasive infection during this cluster; particularly those with community acquired pneumonia or skin sores/scabies. Staphylococcal antibiotic cover should be considered early for unwell patients presenting to hospital with pneumonia and other signs of potential S. aureus infection. It is appropriate to target public health efforts to prevent skin sores and to provide adequate treatment when they occur.

Skull S.A. et al. *Streptococcus pneumoniae carriage and penicillin/ceftriaxone resistance in hospitalised children in Darwin*. Aust N Z J Med. 1996; 26(3) : 391-5.p Abstract: BACKGROUND: The prevalence of resistant Streptococcus pneumoniae (SP) is increasing world-wide. Pneumococcal prevalence and susceptibility patterns are not known for children in the Top End of the Northern Territory. AIMS: To determine the prevalence of nasopharyngeal carriage of pneumococci in children hospitalised in Darwin, and the extent of penicillin and ceftriaxone resistance in these isolates. METHODS: Nasopharyngeal swabs were collected on admission from 85 children who had not received antimicrobials for their admission illness. Antimicrobial resistance was determined following selective culture for SP isolates. Minimal inhibitory concentrations (MICs) for penicillin and ceftriaxone were determined using the E-test method. RESULTS: The overall prevalence of nasopharyngeal SP carriage was 44%. Carriage occurred more often in Aboriginal children from rural areas (56%) than in urban children (24%) (OR 3.94, 95% CI 1.35-11.78, $p < 0.01$). Thirty per cent of isolates were penicillin resistant, 35% were ceftriaxone resistant, and 49% were resistant to at least one of these. One isolate showed high-level resistance to both antimicrobials; all other resistant isolates were of intermediate-level resistance. For the same isolate, MICs for ceftriaxone were more often higher than those for penicillin. Five isolates had intermediate resistance to ceftriaxone whilst remaining sensitive to penicillin. CONCLUSIONS: The prevalence of pneumococcal resistance to penicillin and ceftriaxone in hospitalised children in Darwin is much higher than previously reported in Australia. This has implications for future antimicrobial management and highlights the need for regular regional surveillance of SP resistance. The development of conjugate pneumococcal vaccines for children under two years is a priority.

Slobodnikova L. et al. *Susceptibility of Streptococcus pneumoniae isolated from the respiratory tract of hospitalized children with respiratory tract infections.* Bratisl Lek Listy. 1999; 100(11) : 587-92.p Abstract: The most frequent nasopharyngeal carriers of Streptococcus pneumoniae are young children. Frequent use of antimicrobial therapy in children facilitates the selection of penicillin-resistant strains in this population. These strains, especially if highly resistant, may cause serious therapeutic problems. Aim of the study was to monitor penicillin- and multidrug-resistant S. pneumoniae strains in hospitalized children with respiratory tract infections. Hospitalized children up to five years were examined for S. pneumoniae presence in their upper respiratory tract. Susceptibility to penicillin, erythromycin, trimethoprim/sulfamethoxazole, tetracycline, and chloramphenicol was determined by the disk-diffusion method. The minimal inhibitory concentrations (MIC) of penicillin, erythromycin and trimethoprim/sulfamethoxazole were measured by the E-test. S. pneumoniae strain was isolated from 60 (34.7%) out of 173 microbiologically examined children; 2 different strains were isolated in 9 cases. Nine strains (13.0%) were penicillin resistant with MICs ranging from 1.5 to 8 mg/L, and 17 strains (24.6%) had intermediate susceptibility. Seventeen (24.6%) strains were erythromycin resistant (MIC > or = 1 mg/L). Eighteen strains (26.1%) were resistant and 7 strains (10.1%) were intermediately susceptible to trimethoprim/sulfamethoxazole. Ten strains (14.5%) were not susceptible to tetracycline, and 11 (15.9%) to chloramphenicol. Non-susceptibility (resistance or intermediate susceptibility) to the tested antimicrobials was more prevalent in penicillin-nonsusceptible strains. The current level of S. pneumoniae resistant to antimicrobial drugs in children with respiratory tract infections in the hospital department monitored in our study do not cause problems in the choice of antibacterial therapy. Penicillins still can remain the drug of choice in cases when typical bacterial causing agents of respiratory tract infections are suspected. (Tab. 3, Fig. 2, Ref. 31.).

Smânia Junior A. et al. *Growth and production phases of pycnoporus sanguineus.* Rev. microbiol. 1995; 26(4) : 302-6.p Abstract: Foi observado que na cultura de Pycnoporus sanguineus MIP 89007, a síntese de substâncias com atividade antimicrobiana ocorreu principalmente entre o 18º. e o 23º. dia de incubação. Além disso, foi também constatado que a substância produzida foi rapidamente degradada quando permaneceu no caldo de cultura após ter cessado a síntese e que os extratos obtidos a partir do fungo somente retiveram a atividade quando mantidos … vácuo.

Smego R.A. Jr et al. *Lymphocutaneous syndrome. A review of non-sporothrix causes.* Medicine (Baltimore). 1999; 78(1) : 38-63.p Abstract: The lymphocutaneous syndrome can be caused by a number of diverse microorganisms requiring very different antimicrobial therapy for resolution. The epidemiology and geographic occurrence of the infection often can provide important first clues to the microbiologic etiology. Accurate diagnosis can be accomplished usually by punch or wedge biopsy of a primary lesion or proximal subcutaneous nodule submitted for histopathologic examination and culture. The microbiology laboratory staff should be alerted to the diagnostic possibilities so that appropriate cultural and incubation techniques, procedures, and precautions can be initiated. Provision of a correct microbiologic diagnosis and institution of appropriate antimicrobial therapy will result in a complete cure in almost all instances. Adjunctive surgical debridement may be required for certain organisms such as Nocardia or Mycobacterium chelonae.

Smilack J.D. *Trimethoprim-sulfamethoxazole.* Mayo Clin Proc. 1999; 74(7) : 730-4.p Abstract: After 25 years of use in the United States, trimethoprim-sulfamethoxazole (TMP-SMX) is widely prescribed for various indications. By virtue of sequential blockade of microbial folic acid synthesis, the antimicrobial combination has excellent in vitro inhibitory activity against many common respiratory and urinary tract pathogens, as well as many nosocomial infecting strains. In patients infected with the human immunodeficiency virus, TMP-SMX provides prophylactic and therapeutic potency against Pneumocystis carinii but at the risk of frequent side effects. TMP-SMX is also used for treatment of pulmonary and disseminated nocardiosis and some forms of Wegener's granulomatosis, as well as for prophylaxis of spontaneous bacterial peritonitis. Increasing bacterial resistance and concern about occasional severe adverse effects suggest that the usefulness of TMP-SMX may diminish in the future.

Smirnov V.V. et al. *[The use of batumin-containing disks for the rapid identification of staphylococci].* Zh Mikrobiol Epidemiol Immunobiol. 1999; (5) : 77-80.p Abstract: The study of 467 microbial strains obtained from collections and from clinical sources revealed that microorganisms of the genus Staphylococcus were highly sensitive to batumin, a new antibiotic obtained from bacteria of the genus Pseudomonas.

378 strains of 15 Staphylococcus species proved to be highly sensitive to the diagnostic preparation "Diastaph", developed on the basis of batumin (antibiotic-impregnated discs); After 18-hour incubation the diameter of the growth inhibition zones on agar-containing culture media was 18-38 mm. Strains belonging to the genera Micrococcus, Dermacoccus, Kocuria and Kytococcus, as well as the tested representatives of other taxa (Planococcus, Streptococcus, Corynebacterium, Acinetobacter, Pseudomonas, Neisseria, the representatives of all tested genera of the family Enterobacteriaceae, fungi of the genus Candida) were insensitive to the diagnosticum. "Diastaph" permits not only the rapid identification of staphylococci pure cultures, but also the determination of their presence in association with other microbial species directly in pathological material, which makes it possible to recommend this diagnostic preparation for use in medical, veterinary and sanitary microbiology.

Smirnov V.V. et al. *[The adhesive properties of bacteria in the genus Bacillus—the components of a probiotic].* Mikrobiol Z. 1997; 59(6) : 36-43.p Abstract: The adhesive properties of bacteria of the genus Bacillus as the components of biopreparation for gynecological practice have been studied using erythrocytes as a model of the macroorganism cells. The average level of adhesion of the Bacillus genus bacteria has been established. High degree of adhesion has been manifested only by the strains of bacteria of the Lactobacillus genus, being promising for the creation of biopreparation. Study of the effect of conditionally pathogenic microorganisms on adhesive properties of bacteria of the Bacillus genus has demonstrated the absence of changes in the level of adhesion of bacilli in 48% of mixed populations.

Smirnova G.V. et al. *[Hydrogen peroxide modulates intracellular levels of thiols and potassium in Escherichia coli cells].* Mikrobiologiia. 1998; 67(5) : 594-600.p Abstract: Exposure of growing Escherichia coli K12 cells to 2.0-11.0 mM H2O2 resulted in an increase in the intracellular level of low-molecular-weight thiols (LMWT), whereas exposure to 25 mM H2O2 resulted in its decrease. An inverse correlation between levels of LMWT and potassium was revealed. The treatment of E. coli delta oxyR cells, which are incapable of the adaptive response to H2O2, with 10 mM H2O2 caused a decrease in the LMWT level. In E. coli oxyR2 cells, which constitutively express oxyR-controlled proteins, the same treatment caused a 20% increase in the LMWT level. In response to treatment with the oxidant, delta oxyR mutants lost two times more potassium than wild-type cells (oxyR+). A time course study of the levels of LMWT and potassium in mutants with an affected katG gene, which encodes the HPI catalase and is under the control of oxyR, showed that oxyR may regulate LMWT and potassium levels indirectly, through the regulation of catalase activity. A relationship between catalase activity and the LMWT level was revealed in hydrogen peroxide-treated E. coli cells.

Smith D.W. *Decreased antimicrobial resistance after changes in antibiotic use.* Pharmacotherapy. 1999; 19(8 Pt 2) : 129S-132S; discussion 133S-137S.p Abstract: Vancomycin-resistant enterococci (VRE) and methicillin-oxacillin-resistant Staphylococcus aureus (MRSA) originally predominated in large medical centers; however, these isolates are now common in community hospitals and community clinics. No simple answer is available regarding control of antimicrobial-resistant bacteria, especially VRE and MRSA, as their numbers increase and pose a more serious threat to patient care. The source of colonization is often difficult to identify because of transport of patients among different locations on the continuum of care (e.g., hospital to extended care facility to home and back). At one hospital, control strategies greatly reduced the occurrence of gram-negative bacteria such as VRE. Since 1994, VRE declined from 16% to 5%. Similarly, the number of MRSA isolates declined from 35% to 23%. These declines are attributed to a cohesive working relationship among pharmacists, microbiologists, and infectious disease physicians and personnel, and to a decision to decrease administration of cephalosporins in favor of piperacillin-tazobactam.

Smith M.A. et al. *Contaminated stethoscopes revisited.* Arch Intern Med. 1996; 156(1) : 82-4.p Abstract: BACKGROUND: Because of their universal use by medical professionals, stethoscopes can be a source of nosocomial infections. OBJECTIVE: To determine the frequency of contamination of stethoscopes with bacteria and fungi. METHODS: Cultures were obtained from 200 stethoscopes from four area hospitals and outpatient clinics in Houston, Tex. The frequency of stethoscope contamination in different groups of hospital personnel and medical settings was determined. We also measured the frequency of antimicrobial resistance of the staphylococcal strains that were isolated. RESULTS: One hundred fifty-nine (80%) of the 200 stethoscopes surveyed were contaminated with microorganisms. The majority of organisms that were isolated were gram-positive bacteria, primarily Staphylococcus species. Fifty-eight percent of the Staphylococcus species that were isolated, including four (17%) of 24 Staphylococcus aureus isolates, were resistant to methicillin. Physicians' stethoscopes were contaminated more often than those of other medical personnel groups (P =.02). Stethoscopes used only in designated areas were contaminated less frequently than stethoscopes belonging to individual medical personnel (P =.01). Although stethoscopes were contaminated in all areas, stethoscopes from the pediatric medical setting were contaminated less frequently than those from other hospital areas (P =.009). CONCLUSIONS: Stethoscope use may be important in the spread of infectious agents, including antimicrobial-resistant strains, and strategies to reduce the contamination of stethoscopes should be developed. We recommend disinfection of stethoscopes or regular use of disposable stethoscope covers.

Smith P.W. et al. *Microbiologic survey of long-term care facilities.* Am J Infect Control. 2000; 28(1) : 8-13.p Abstract: BACKGROUND: We undertook a microbiologic survey of long-term care facilities to categorize bacteria found in cultures of residents. Culture and sensitivity data were collected on 566 samples from indwelling bladder catheters, percutaneous gastrostomy tubes, nares, stool, wounds, pressure ulcers, and tracheostomies in 25 Nebraska and Iowa facilities. Information was also collected on resident factors (eg, presence of indwelling urinary catheter, prior antibiotic administration) and institutional variables (eg, number of beds, nosocomial infection rates). RESULTS: There were 478 gram-negative isolates, the leading organisms being Pseudomonas aeruginosa, Proteus mirabilis, Escherichia coli, and Klebsiella pneumoniae. There were 221 gram-positive isolates, the most frequently seen of which were enterococci and Staphylococcus aureus. Of the 442 residents sampled in the study, 168 (38%) were taking, or had within the previous month been taking, a systemic antibiotic. Quinolones were the most frequently prescribed antibiotic class. The institutional prevalence of urinary catheterization averaged 6.7%. CONCLUSIONS: Significant antibiotic pressure exists in long-term care facilities, a fact that is reflected in antibiotic resistance patterns. A variety of gram-positive and gram-negative bacteria were found in nursing home culture specimens.

Smith T.L. et al. *Antimicrobial resistance in Staphylococcus aureus.* Microbes Infect. 1999; 1(10) : 795-805.p Abstract: Recognized since 1883 as a common cause of infection, Staphylococcus aureus' preantimicrobial-era bacteremia mortality rate was 82%. The mortality of that era threatens to return as evidence of growing vancomycin resistance undermines the utility of vancomycin therapy. Successful treatment of S. aureus infections requires knowledge of its antimicrobial resistance capacity.

Sng L.H. et al. *Antimicrobial susceptibility testing of a clinical isolate of vancomycin-dependent enterococcus using D-alanine-D-alanine as a growth supplement.* Am J Clin Pathol. 1998; 109(4) : 399-403.p Abstract: Bacteremia due to a vancomycin-dependent enterococcus (VDE) occurred during long-term vancomycin therapy in a renal transplant recipient with underlying pancreatitis and a vancomycin-resistant enterococcal (VRE) wound infection and bacteremia. The VDE was

isolated from blood during vancomycin therapy and grew only in the presence of vancomycin and D-alanine-D-alanine (DADA), a substance required for cell-wall synthesis. Colonies beyond the periphery of growth of the VDE around a vancomycin disk contained vancomycin-independent revertant mutants after 48 hours of incubation. Pulsed-field gel electrophoresis of the VDE, revertant mutant, the initial blood culture isolate ofVRE, and an autopsy isolate showed that the four strains were identical. Antimicrobial susceptibility testing was performed using standard macrobroth and microbroth dilution methods. DADA was used as a growth supplement for macrobroth dilution susceptibility testing of the VDE isolate. Minimum inhibitory concentrations (MICs) were similar for the VRE isolate and the VDE revertant, which were both resistant to ampicillin, high-level gentamicin, ciprofloxacin, imipenem, vancomycin, and daptomycin, and were susceptible to fusidic acid, high-level streptomycin, rifampin, and a quinupristin-dalfopristin combination. The MICs of teicoplanin were 2 microg/mL or less and 16 microg/mL for the clinical VRE isolate and the VDE revertant, respectively. The autopsy isolate was resistant to all antimicrobials tested and showed a fourfold increase in MICs for quinupristin-dalfopristin compared with that of the original blood isolate. The VDE was susceptible to all drugs tested except vancomycin.

Snydman D.R. et al. *Multicenter study of in vitro susceptibility of the Bacteroides fragilis group, 1995 to 1996, with comparison of resistance trends from 1990 to 1996.* Antimicrob Agents Chemother. 1999; 43(10) : 2417-22.p Abstract: Antimicrobial resistance, including plasmid-mediated resistance, among the species of the Bacteroides fragilis group is well documented. An analysis of the in vitro susceptibility of B. fragilis group species referred between 1995 and 1996 as well as during a 7-year (1990 to 1996), prospective, multicenter survey of over 4,000 clinical isolates of B. fragilis group species was undertaken to review trends in the percent resistance to and geometric mean MICs of the antibiotics tested. There was a trend toward a decrease in the geometric mean MICs of most beta-lactam antibiotics, while the percent resistance to most agents was less affected. Within the species B. fragilis, the geometric mean MICs showed significant (P < 0.05) decreases for piperacillin-tazobactam, ticarcillin-clavulanate, piperacillin, ticarcillin, ceftizoxime, cefotetan, and cefmetazole; a significant increase was observed for clindamycin and cefoxitin. For the non-B. fragilis species, a significant decrease in the geometric mean MICs was observed for meropenem, ampicillin-sulbactam, ticarcillin-clavulanate, piperacillin, ticarcillin, ceftizoxime, and cefmetazole; a significant increase was observed for cefoxitin. Significant increases in percent resistance were observed within the B. fragilis strains for ticarcillin and ceftizoxime and within the non-B. fragilis isolates for cefotetan. Significant increases in percent resistance among all B. fragilis group species were observed for clindamycin, while imipenem showed no significant change in resistance trends. The trend analysis for trovafloxacin was limited to 3 years, since the quinolone was tested only in 1994, 1995, and 1996. During the 7 years analyzed, there was no resistance to metronidazole or chloramphenicol observed. The data demonstrate that resistance among the B. fragilis group species has decreased in the past several years, the major exception being clindamycin. The majority of the resistance decrease has been for the beta-lactams in B. fragilis, compared to other species. The reasons for these changes are not readily apparent.

Snydman D.R. et al. *Analysis of trends in antimicrobial resistance patterns among clinical isolates of Bacteroides fragilis group species from 1990 to 1994.* Clin Infect Dis. 1996; 23 Suppl 1 : S54-65.p Abstract: Antimicrobial resistance, including plasmid-mediated resistance, among Bacteroides fragilis group species is well documented. A 5-year (1990-1994) prospective, eight-center survey of 3,177 clinical isolates of Bacteroides species was undertaken to review trends in resistance, using the breakpoints for full and intermediate susceptibility established by the National Committee for Clinical Laboratory Standards. No documented resistance to either metronidazole or chloramphenicol was found in this survey. Among B. fragilis isolates virtually no resistance was seen to imipenem, meropenem, ampicillin/sulbactam, piperacillin/tazobactam, or ticarcillin/clavulanate. Significant increases in resistance among B. fragilis isolates to cefotetan, ceftizoxime, and clindamycin (p <.01) were noted. Resistance to cefoxitin remained unchanged. Among the non-fragilis species of the B. fragilis group, there was virtually no resistance to imipenem, meropenem, chloramphenicol, or metronidazole. The three beta-lactamase inhibitors had increasing levels of resistance, although 95%-98% of strains were susceptible (p <.05). There was a significant decline in cefoxitin, cefmetazole, and clindamycin activity over time against these strains (p <.01). There was a significant (P <.001) increase in geometric mean minimum inhibitory concentration for most drugs and species tested from 1990 to 1994. Clusters in the eight institutions could not account for this rise in resistance. This survey demonstrates that rates of resistance of B. fragilis and non-fragilis species of B. fragilis group are increasing.

Sobel J.D. *Is There a Protective Role for Vaginal Flora?* Curr Infect Dis Rep. 1999; 1(4) : 379-383.p Abstract: The notion of a protective vaginal flora is relatively new. Resident flora manifest colonization resistance to prevent or reduce the likelihood of exogenous microorganisms, viruses, bacteria, yeast, or parasites becoming established in the lower genital tract of women following sexual (HIV, Neisseria gonorrhoeae, Escherichia coli, Candida albicans, Trichomonas vaginalis) or nonsexual (uropathogenic E. coli) transmission. The concept of preserving or reestablishing protective flora has been hastened by several factors, including the potential widespread use of vaginal microbicides, the increased heterosexual spread of HIV, and the imminent availability of exogenous Lactobacillus species probiotic therapy.

Sobel J.D. et al. *Candiduria: a randomized, double-blind study of treatment with fluconazole and placebo. The National Institute of Allergy and Infectious Diseases (NIAID) Mycoses Study Group.* Clin Infect Dis. 2000; 30(1) : 19-24.p Abstract: Management of candiduria is limited by the lack of information about its natural history and lack of data from controlled studies on the efficacy of treating it with antimycotic agents. We compared fungal eradication rates among 316 consecutive candiduric (asymptomatic or minimally symptomatic) hospitalized patients treated with fluconazole (200 mg) or placebo daily for 14 days. In an intent-to-treat analysis, candiduria cleared by day 14 in 79 (50%) of 159 receiving fluconazole and 46 (29%) of 157 receiving placebo (P<.001), with higher eradication rates among patients completing 14 days of therapy (P<.0001), including 33 (52%) of 64 catheterized and 42 (78%) of 54 noncatheterized patients. Pretreatment serum creatinine levels were inversely related to candiduria eradication. Fluconazole initially produced high eradication rates, but cultures at 2 weeks revealed similar candiduria rates among treated and untreated patients. Oral fluconazole was safe and effective for short-term eradication of candiduria, especially following catheter removal. Long-term eradication rates were disappointing and not associated with clinical benefit.

Sobieszczanska B. et al. *Cross-reactivity between Borrelia burgdorferi and "arthrogenic" bacteria in sera from patients with reactive arthritis.* Rocz Akad Med Bialymst. 1996; 41(1) : 90-5.p Abstract: The occurrence of specific antibodies for "arthrogenic bacteria" and Borrelia burgdorferi was analysed in sera samples from 30 patients with reactive arthritis. The control group consisted of 30 healthy blood donors. Our data showed that 66.6% (20) of the 30 examined patients had positive tests for Borrelia burgdorferi antigens and of all the patients, most of them (85%) had increased antibody levels against Salmonella antigens, 30% had increased levels of antibodies against Shigella antigens and 10% had antibodies for Yersinia antigens. Our findings indicated that the presence of antibodies to Borrelia burgdorferi and "arthrogenic enteric bacteria" in sera samples of patients with REA is evidence of wide cross-reactivity between these microorganisms.

Socan M. et al. *Microbial aetiology of community-acquired pneumonia in hospitalised patients.* Eur J Clin Microbiol Infect Dis. 1999; 18(11) : 777-82.p Abstract: Adult patients hospitalised with community-acquired pneumonia were studied prospectively to determine the microbial aetiology of pneumonia. Between April 1996 and March 1997, blood and sputum samples were collected for culture. Throat swabs were obtained for isolation of viruses and for detection of antigens of Chlamydia pneumoniae, influenza viruses A and B, respiratory syncytial virus and parainfluenza virus. Antibodies against Legionella spp., Mycoplasma pneumoniae, Chlamydia pneumoniae, Chlamydia psittaci, Coxiella burnetii, influenza viruses A and B, respiratory syncytial virus, adenovirus and parainfluenza virus were tested in serum samples. Two hundred eleven patients were included in the study; paired sera were available from 152 patients. Blood culture was positive in 23 (10.9%) patients, Streptococcus pneumoniae being the bacterium isolated most frequently. A fourfold or greater rise or fall in the Chlamydia pneumoniae IgG and/or IgM antibody titre was found in 20 (9.5%) patients and a high antibody titre (> or = 1:512) in the first and/or the second serum sample in 18 (18.5%) patients. Antibodies confirming acute Mycoplasma pneumoniae infection were found in 12 (5.7%) patients, Legionella spp. in six (2.8%), Chlamydia psittaci in two and Coxiella burnetii in one. Three patients had pulmonary tuberculosis. Only two patients had a virus present in the throat swab (adenovirus in one patient and echovirus in the other), and in nine patients, viral antigen was detected. Acute viral infection was confirmed in 51 (24.1%) patients. Bacterial pneumonia was diagnosed in 84 (39.8%) patients, 23 of whom had concurrent viral infection. Acute viral pneumonia without any other identified pathogen was diagnosed in 28 patients. Streptococcus pneumoniae and Chlamydia pneumoniae were the most frequently identified microorganisms.

Sociedad Chilena de Infectología. *Consideraciones sobre la vacunación contra la hepatitis A / Considerations about hepatitis A vaccination*. Rev. méd. Chile. 1996; 124(3) : 362-6.p Abstract: Hepatitis A is endemic in Chile with rates of 100 cases per 100.000 inhabitants/years, figure that triplicates in school age children. Its social impact justifies educational and other public work measures to control it. Vaccines are an effective but expensive control resourse. The vaccine elaborated with the inactive HM 175 strain, recently licensed in Chile, is immunogenic, effective and well tolerated in adults and children over 3 years old. Its main indication is for voyagers to endemic areas and patients with chronic liver diseases. In Chile, its individual prescription requires the assessment of patient's individual risk and basal immunological status. Its massive application requires a better knowledge of hepatitis A geographical distribution, age of infection and cost benefit ratios (AU).

Sociedad Chilena de Infectología. *Consideraciones sobre la vacunación contra la hepatitis A*. Rev. méd. Chile. 1996; 124(3) : 362-6.p Abstract: Hepatitis A is endemic in Chile with rates of 100 cases per 100.000 inhabitants/years, figure that triplicates in school age children. Its social impact justifies educational and other public work measures to control it. Vaccines are an effective but expensive control resourse. The vaccine elaborated with the inactive HM 175 strain, recently licensed in Chile, is immunogenic, effective and well tolerated in adults and children over 3 years old. Its main indication is for voyagers to endemic areas and patients with chronic liver diseases. In Chile, its individual prescription requires the assessment of patient's individual risk and basal immunological status. Its massive application requires a better knowledge of hepatitis A geographical distribution, age of infection and cost benefit ratios (AU).

Soderling E. et al. *Growth of xylitol-resistant versus xylitol-sensitive Streptococcus mutans strains in saliva*. Acta Odontol Scand. 1998; 56(2) : 116-21.p Abstract: Five Streptococcus mutans pairs (serotype c S. mutans 10449 and four clinical isolates of S. mutans: 123.1, LG1, OMFA, T10B) were used to find out if the xylitol-resistant (XR) natural mutants of the corresponding xylitol-sensitive (XS) S. mutans parental strains differ in their growth patterns in saliva. The isogenic X natural mutants of the parental S. mutans strains were selected after sequential cultivations in the presence of xylitol and glucose. The XR/XS strains pairs were grown in individual and pooled glucose-supplemented filter-sterilized salivas (one to five sequential cultivations). The two salivas used represented subjects with good or poor support of the growth of S. mutans in vivo. Protease and peptidase activities were determined from the saliva growth media and cell suspensions. Salivary protein profiles were analyzed using SDS-PAGE and native IEF before and after the cultivations. The growth properties of the XR/XS S. mutans pairs were similar in both individual and pooled salivas. Sequential cultivation of all strains did not show any differences in growth patterns. XS strains were inhibited by the presence of xylitol (2% w/v) in pooled saliva, as shown for other glucose-supplemented media. Protease and peptidase activities of the XR/XS S. mutans pairs were low and of similar magnitude. Also, the general hydrolytic properties of most XR/XS S. mutans pairs appeared similar as judged by the small growth-induced changes in salivary protein profiles. In conclusion, saliva, the source of nutrients for salivary microorganisms in vivo, favored neither the XR nor the XS strains of S. mutans.

Soepandi P. et al. *The pattern of micro-organisms and the efficacy of new macrolide in acute lower respiratory tract infections.* Respirology. 1998; 3(2) : 113-7.p Abstract: Lower respiratory tract infection (LRTI) is one of the major health problems in developing countries such as Indonesia. According to the National Household Health Survey conducted by the Ministry of Health in 1992, LRTIs still rank fourth as the main cause of death in Indonesia. The problem of LRTIs could be simply managed as long as the causative organism can be identified and the proper antibiotic known. In some occasions, it is not quite so easy to identify the causative micro-organism, especially in lower tract infections. There are several methods of obtaining specimens from LRTIs for cultures. The easiest, most simple way is to collect expectorated sputum. Unfortunately, because of the high rate of contamination by upper respiratory tract flora, this method is not reliable. Recognizing the difficulties with routine expectorated sputum cultures, two alternative approaches have been suggested. One approach is to bypass potential expectorated sputum 'contaminants' in the oropharynx by transtracheal aspiration or transthoracic aspiration. The second approach is to modify the usual technique of processing expectorated sputum by either washing techniques or by quantitative cultures. Azithromycin and clarithromycin are chemically related to macrolide erithromycin. Both antibiotics retain the traditional macrolide spectrum of activity against gram-positive and atypical pneumonia pathogens, while demonstrating improved activity against gram-negative bacteria. The American Thoracic Society (ATS) recommended the use of macrolide for outpatients with community-acquired pneumonia, without comorbidity and 60 years of age or younger. A total of 34 outpatients with acute LRTIs were open-comparative, randomly allocated to treatment with the new macrolide in Persahabatan Hospital, Jakarta, 1996. The purposes of this study were: (i) to identify the causative micro-organisms; and (ii) to evaluate the clinical efficacy of the new macrolide in these infections. Azithromycin 500 mg was given orally once a day for 3 days and was administered 1 h before or 2 h after every meal. Clarithromycin 500 mg was given orally every 12 h for 10 days. The diagnosis of the patients were: 16 with pneumonia, 10 with acute bronchitis and 8 with acute exacerbation of chronic bronchitis. In this study of 34 patients, the sputum specimens were washed with N acetylcysteine before culture and we could only detect micro-organisms in one patient. Before treatment, we found 47 strains in 33 (97.05%) patients and after treatment we found five strains. From serological examination, only four (11.76%) atypical bacterial were detected. The most frequently found microorganisms were 23 strains of Klebsiella pneumoniae (40.42%), 10 of Streptococcus alpha haemolyticus (21.26%), five of Streptococcus pneumoniae (10.63%) and five of Staphylococcus aureus (10.63%). The atypical bacterial were: two Legionella pneumophila, one Mycoplasma pneumoniae

and one Chlamydia pneumoniae. The clinical efficacy of new macrolides were 100% and the bacteriological responses with eradication of 94.12% vs 70.59% of isolates in the azithromycin and clarithromycin groups are shown in Table 1. There were no adverse reactions detected in the two treatment groups until the end of the study.

Sofianou D. et al. *Comparative in vitro activity of cefepime against nosocomial isolates.* J Chemother. 1997; 9(5) : 341-6.p Abstract: Cefepime, a new parenteral cephalosporin, was evaluated for its in vitro antibacterial activity in comparison with other broad-spectrum antibiotics against a total of 445 recently isolated microorganisms of nosocomial origin. Cefepime was highly active against all species of Enterobacteriaceae with minimum inhibitory concentrations (MIC90S) ranging from 0.25-8 micrograms/ml. Cefepime showed moderate activity against Acinetobacter spp (MIC50 and MIC90, 16 micrograms/ml) but its activity was superior to that of any drug tested, except imipenem. Against Pseudomonas aeruginosa its activity was comparable to that of ceftazidime and was greater than that of cefotaxime, aztreonam, ciprofloxacin and aminoglycosides. Of all the agents tested, imipenem was the most active compound. Cefepime was active against Staphylococcus aureus and coagulase-negative methicillin-susceptible staphylococci but it had no activity against methicillin-resistant staphylococci and enterococci.

Soh S.W. et al. *Serotype distribution and antimicrobial resistance of Streptococcus pneumoniae isolates from pediatric patients in Singapore.* Antimicrob Agents Chemother. 2000; 44(8) : 2193-6.p Abstract: One hundred eighty Streptococcus pneumoniae strains isolated from children at a pediatric hospital in Singapore from 1997 to 1999 were serotyped and their antimicrobial susceptibility patterns were determined. Sixty-three percent of the isolates were resistant to penicillin. Significantly large numbers of the strains investigated were resistant to trimethoprim-sulfamethoxazole (87.8%), tetracycline (71.7%), erythromycin (67.8%), and chloramphenicol (40%). Penicillin and multidrug resistance was mostly associated with the frequently isolated S. pneumoniae isolates of serotypes (serotypes 19F, 23F, 6B, and 14). Isolates of serotype 19F, the serotype most commonly encountered in Singapore (41.1%), had the highest prevalence of penicillin (78.4%) and multidrug resistance (94.6%). Most of the invasive S. pneumoniae isolates (8 of 17; 47. 1%) were of serotype 14.

Sohn Y.M. *Use of vaccine in the era of antimicrobial resistance: need of effective pneumococcal vaccines.* Yonsei Med J. 1998; 39(6) : 611-8.p Abstract: Streptococcus pneumoniae is an important pathogen causing invasive infections particularly in children. Penicillin-nonsusceptible pneumococci are very prevalent in Korea and a difficult problem in antimicrobial treatment. Immunization with effective vaccines including viral and bacterial vaccines has proven to be the most effective and reliable method to prevent the target disease. Universal immunization to infants with Haemophilus influenzae type b conjugate vaccine has dramatically proven to be very effective in reducing invasive Hib diseases and also the carriage rate. The 23-valent pneumococcal polysaccharide vaccine is effective in preventing invasive diseases in young adults and covers most of the penicillin-nonsusceptible types. It has not proven very effective in the prevention of otitis media, and is unable to elicit adequate antibody response in children younger than 2 years of age. Recently a new polysaccharide-protein conjugate vaccine was developed which can elicit antibody response in children younger than 2 years of age. However, the vaccine is only 8-valent at the moment. Studies are required to determine the possible idiotypic modulation and nonproductive immune response when polysaccharide vaccine is administered to infants. Part of the problem of antimicrobial-resistant pneumococcal infection may be solved in the future with the use of improved vaccine. Preventing pneumococcal infections with safe and effective vaccines will not only reduce the development of antibiotic resistance, but could also be the most cost-effective method to control pneumococcal disease.

Sokmen A. et al. *The in vitro antibacterial activity of Turkish medicinal plants.* J Ethnopharmacol. 1999; 67(1) : 79-86.p Abstract: A total of 76 extracts from 35 plants available in the Turkish flora were assayed for their in vitro antibacterial activities against five pathogenic bacteria and a yeast. Sixteen crude extracts from eight plant species were found to possess an activity against at least one or more test microorganisms. Bioassay-guided fractionation of the most active crude extracts was also carried out with the most active extracts. Activity against Staphylococcus aureus, Bacillus cereus, Branhamella catarrhalis, Escherichia coli, Clostridium perfringens and Candida albicans (yeast) is discussed.

Sole Violan J. et al. *Impact of quantitative invasive diagnostic techniques in the management and outcome of mechanically ventilated patients with suspected pneumonia.* Crit Care Med. 2000; 28(8) : 2737-41.p Abstract: OBJECTIVE: To assess how data obtained by invasive diagnostic techniques may affect management and outcome of patients with suspected ventilator-associated pneumonia (VAP), in comparison with noninvasive qualitative techniques. DESIGN: Prospective study. SETTING: An 18-bed medical and surgical intensive care unit. PATIENTS: A total of 91 patients suspected of having VAP were randomized into two groups. In group A (n = 45), quantitative cultures obtained by either bronchoscopic or nonbronchoscopic techniques were performed, whereas in group B (n = 43), patients were treated based on clinical judgment and nonquantitative tracheal aspirates cultures. Three patients were excluded because of the absence of follow-up. RESULTS: In patients with positive cultures, therapeutic changes were made in 20 patients. In four patients (three from group A and one from group B, p = NS), initial empirical antibiotic treatment was modified because the isolated microorganisms were not susceptible (all of them had late-onset pneumonia). The isolated organisms responsible for antibiotic modifications were methicillin-resistant Staphylococcus aureus (three patients) and Pseudomonas aeruginosa (one patient). In three patients, the antimicrobial therapy was considered inappropriate because the isolated microorganisms were multiresistant and treated with only one effective antibiotic. In 13 patients (ten from group A and three from group B, p <.05), treatment was changed to select a narrower spectrum antibiotic. No therapeutic modifications were made in patients with negative cultures based on the results of quantitative cultures. The overall mortality was 22.2% in group A and 20.9% in group B. There were no differences in intensive care unit stay or days of mechanical ventilation (23.67+/-3.15 vs. 22.42+/-3.01 and 19.99+/-2.88 vs. 19.24+/-3.04, respectively). CONCLUSIONS: In our study population, the routine use of quantitative invasive diagnostic tools is not justified in the setting of ventilated patients clinically suspected of having nosocomial pneumonia.

Soler N. et al. *Bronchial microbial patterns in severe exacerbations of chronic obstructive pulmonary disease (COPD) requiring mechanical ventilation.* Am J Respir Crit Care Med. 1998; 157(5 Pt 1) : 1498-505.p Abstract: We carried out a comprehensive microbiological study of the upper and lower airways in patients with severe exacerbations of chronic obstructive pulmonary disease (COPD) requiring mechanical ventilation in order to describe microbial patterns and analyze their clinical significance. Quantitative cultures of tracheobronchial aspirates (TBAs), bronchoscopically retrieved protected specimen brush (PSB) and bronchoalveolar lavage fluid (BALF) at admission to the ICU and after 72 h, as well as serology for bacteria and respiratory viruses were performed. Fifty patients (mean age 68 +/- 8, 46 males) were studied prospectively. Potentially pathogenic microorganisms (PPMs) and/or a positive serology were present in 36 of 50 (72%) patients, including 12 (33%) polymicrobial cases. Only six (12%) had no pathogen in any sample in the absence of antimicrobial pretreatment. Microbial patterns corresponded to community-acquired pathogens (Streptococcus pneumoniae, Haemophilus influenzae, and Moraxella catarrhalis) in 19 of 34 (56%) and to gram-negative enteric bacilli (GNEB), Pseudomonas, and Stenotrophomonas spp. in 15 of 34 (44%) of isolates. Chlamydia

pneumoniae and respiratory viruses were found in 18% and 16% of investigations, respectively. Repeated investigation after 72 h in 19 patients with PPMs in the initial investigation revealed eradication of virtually all isolates of community-acquired pathogens and GNEB but persistence of three of five Pseudomonas spp. and both Stenotrophomonas spp. as well as the emergence of new GNEB, Pseudomonas and Stenotrophomonas spp. Clinical parameters neither predicted the presence of PPMs nor of GNEB and Pseudomonas/Stenotrophomonas spp. Nevertheless, severe pneumonia attributable to initially isolated pathogens occurred in two patients with severe COPD exacerbation. We conclude that pathogens were more frequently present than previously reported. The rate of GNEB and Pseudomonas/Stenotrophomonas spp. isolates was high. The presence of pathogens was clinically unpredictable. Thus, in this population of patients with severe exacerbations of COPD, it may be advisable to obtain respiratory samples and to treat according to diagnostic results. Further studies are warranted to clarify this issue.

Soler Soler J.L. et al. *[Relationship between preoperative urine cultures and prostatic gland cultures in patients treated for benign prostatic hyperplasia].* Actas Urol Esp. 1999; 23(6) : 505-17.p Abstract: OBJECTIVES: 1.—Investigate the bacteriuria preoperative in patients who will be operate on for Being Prostatic Hyperplasia (BPH). 2.—Define the prevalence of the prostatic colonization or infection. 3.—Try to correlate the bacteriological findings of urine and prostate, and find the degree of concordance between the microorganisms which can be commonly found in urine and prostatic tissue. METHOD AND MATERIALS: Prospective series of 175 patients undergoing prostatectomy for obstructive symptoms. The protocol revealed, among others variables: the preoperative urine culture; the presence or the absence of catheter; and the quantitative bacteriological culture of prostatic tissue. The information could be analised and its results could be obtained later on. The analysis stages consisted of both a descriptive and an analytic study. RESULTS AND CONCLUSIONS: 1.—Only 36 patients (20.6%) presented bacteriological increase of microorganisms (> or = 10(4) UFC/ml) in the preoperative urine culture. The Escherichia coli was the most common microorganism, followed by the Enterococcus faecalis, coagulase-negative Staphylococcus and the Pseudomona aeruginosa. A single microorganism grew in 31 out of the 36 positive cultures. 2.—The prevalence of the infection or colonization of the prostatic tissue was 25.1% (44 patients). The most common isolated microorganism was the coagulase-negative Staphylococcus followed by the Escherichia coli and the Enterococcus faecalis, in concentrations of at least 10(4) UFC/gr of tissue in the 79.6%. A single microorganism was isolated in 32 out of 44 patients. 3.—The proportion of positive prostatic cultures, in patients with positive urine culture (38.3%), was significantly higher than the one obtained in patients with negative urine cultures (16.5%) ($p < 0.0001$). Nevertheless, 52.3% of the 44 patients with positive prostatic cultures had negative urine culture, and only 21 (58.3%) out of the 36 patients with positive urine cultures presented a bacteriological growth in prostate. The degree of concordance (Kappa index) between the microorganisms which were found in preoperative urine and prostatic tissue is low or none for the majority of them.

Soler Soler J.L. et al. *[Bacterial content of the enucleated prostate gland].* Arch Esp Urol. 1999; 52(8) : 823-34.p Abstract: OBJECTIVE: To determine the prevalence of prostatic colonization or infection in patients undergoing prostatic surgery for obstructive symptoms due to benign hyperplasia of the prostate (BPH), to identify and quantitate the microorganisms isolated in quantitative bacterial tissue cultures, and to determine the influence of open surgery vs endoscopy on the microbiological findings. METHODS: A prospective study was conducted on 175 patients undergoing surgery for BPH. All patients were entered into a study protocol that included quantitative bacterial cultures of prostatic tissue. Data of previously defined variables were entered into a data base for subsequent analysis comprised of redefinition of the variables and descriptive and analytical studies. RESULTS: 44 of the 175 patients (25.1%) had a positive bacterial culture of prostatic tissue. Histological lesions indicating prostatitis associated with BPH were found in 68 of the 175 patients (38.9%), regardless of the presence or absence of bacteria. Of these 68 patients with histologically demonstrated prostatic inflammation, only 19 (27.9%) had a positive prostatic tissue culture. The incidence of granulomatous prostatitis was 1.1%. CONCLUSIONS: The presence of bacteria was demonstrated in prostates of a significant number of patients (25.1%) undergoing prostatectomy for BPH. The microorganisms most frequently isolated in the quantitative bacterial cultures were, by order of frequency, coagulase negative Staphylococci, Escherichia coli and Enterococcus faecalis, which were present in concentrations of at least 10(4) CFU/Gm in prostatic tissue of 79.6% of the cases. No differences were found between the type of procedure the patient underwent and the presence or absence of prostatic infection.

Soloaga R. et al. *[The microbiology laboratory in the diagnosis of bacteremia associated with catheters].* Enferm Infecc Microbiol Clin. 2000; 18(2) : 62-5.p Abstract : Catheter related sepsis is an outstanding problem in patients in every age group. The microbiological diagnosis should consider the main pathways of infection (catheter-skin interface, endoluminal). With this aim we analysed 1496 central and peripheral short term catheters and 119 episodes of catheter related bacteremia. Catheters were cultured according to the quantitative technique of Brun Buisson (QT), the semiquantitative technique of Maki (SQ) and qualitative broth culture (QL). The following results of sensitivity, specificity, positive predictive value, negative predictive value and Youden index were obtained: SQ = 87%, 88%, 40%, 99%, 0.75; QT (> or = 10(2) CFU/ml) = 88%, 89%, 43%, 99%, 0.77; QT (> or = 10(3) CFU/ml) = 77%, 92%, 48%, 97%, 0.69; QL = 94%, 68%, 20%, 99%, 0.62. Results of SQ and QT > or = 10(2) were comparable, nevertheless, the addition of QT to SQ increased the detection of bacteremia by 12.8%, while in the opposite situation the increase was 10%. According to this, it is advisable to combine routinely SQ and QT. Finally, in 42 episodes of bacteremia related to implanted catheters processed by quantitative differential culture of blood drawn through the catheter and blood drawn through the peripheral vein the relationships were: > 1000 in 79% of cases, between 100 and 1000 in 9% of cases and between 5 and 10 in just 5% of cases.

Somaglia L. et al. *Placa microbiana (enfoque infectológico-ecológico).* Rev. ateneo argent. odontol. 1995; 34(1) : 9-17.p Abstract: En este artículo, se analizan solamente algunos aspectos de la dinámica de la placa microbiana del área periodontal (placa subgingival), bajo un modelo infecto-ecológico; esto es: trasladando algunos principios del área de la infectología y de la ecología al ecosistema surco gingival-bolsa periodontal, y reinterpretando con ellos la etiopatogenia de las enfermedades periodontales (AU).

Sommer R. et al. *Increased inactivation of Saccharomyces cerevisiae by protraction of UV irradiation.* Appl Environ Microbiol. 1996; 62(6) : 1977-83.p Abstract: The principle of equi-effectivity of the product of intensity and exposure time (principle of Bunsen-Roscoe) of UV irradiation has been assumed to be valid for the inactivation of microorganisms in general. Earlier studies claimed higher survival of Escherichia coli B/r with fractionated irradiation compared with single-exposure survival. However, data on the inactivation effect of protraction of UV irradiation are not available. By means of a specially designed UV irradiation apparatus which secured absolute UV dose measurements throughout the experiments, the effects of variation of UV irradiation intensities (253.7 nm) and exposure times were tested on the inactivation of a bacterial virus (Staphylococcus aureus phage A994), a vegetative bacterial strain (E. coli ATCC 25922), and bacterial spores (Bacillus subtilis ATCC 6633) as well as three haploid laboratory strains (RC43a, YNN281, and YNN282) and two diploid strains (commercial bakery yeast strain and laboratory strain YNN281 x

YNN282) or yeast (Saccharomyces cerevisiae) and spores of the latter diploid yeast strain. Each test organism was exposed to three UV intensities (0.02, 0.2, and 2 W/m2), with corresponding exposure times resulting in three dose levels for each intensity. Differences in inactivation rates were tested by analyses of variance and Newman-Keuls tests. Virus and bacteria showed no differences in inactivation rates by variation of intensities and exposure times within selected UV doses; hence, the principle of Bunsen-Roscoe could not be rejected for these strains. However, in the eukaryotic test strains of S. cerevisiae longer exposure times with lower intensities led to enhanced inactivation in both haploid and diploid strains, with a more pronounced effect in the diploid yeast strains, whereas in yeast spores in this dose rate effect could not be observed.

Sopena N. et al. *Prospective study of community-acquired pneumonia of bacterial etiology in adults.* Eur J Clin Microbiol Infect Dis. 1999; 18(12) : 852-8.p Abstract: The aim of this study was to prospectively analyze the bacterial etiology of community-acquired pneumonia in adults in Spain. From May 1994 to February 1996, 392 episodes of CAP diagnosed in the emergency department of a 600-bed university hospital were studied. An etiological diagnosis based on noninvasive microbiological investigations was achieved in 228 cases (58%); 173 of these diagnoses were definitive and 55 probable. Streptococcus pneumoniae, which caused 23.9% of the episodes, was the predominant pathogen observed, followed by Chlamydia pneumoniae (13.5%) and Legionella pneumophila (12.5%). Other less frequent pathogens found were Haemophilus influenzae (2.3%), Pseudomonas aeruginosa (1.5%), Mycoplasma pneumoniae (1.3%), Coxiella burnetii (1%), Moraxella catarrhalis (2 cases), Nocardia spp. (2 cases), and Staphylococcus aureus (2 cases). Streptococcus pneumoniae was significantly more frequent in patients with underlying disease and/or age > or =60 years (28% vs. 13%, P = 0.002), while Legionella pneumophila was more frequent in patients below 60 years of age and without underlying disease (20% vs. 9%, P = 0.006). Likewise, Streptococcus pneumoniae and Legionella pneumophila were the most frequent etiologies in patients requiring admission to the intensive care unit, occurring in 29% and 26.3% of the patients, respectively. In addition to Streptococcus pneumoniae, other microorganisms such as Chlamydia pneumoniae and Legionella spp. should be seriously considered in adults with community-acquired pneumonia when initiating empiric treatment or ordering rapid diagnostic tests.

Sorensen C.H. et al. *Mucosal immunity and bacteriology of the eustachian tube.* Ear Nose Throat J. 1998; 77(9) : 748-9, 752-3, 757-8 passim.p Abstract: The pathogenesis of otitis media is a multifaceted process that is not completely understood. Eustachian tube dysfunction plays a central but uncertain role, as do viral and bacterial microorganisms. Of the latter, the three most important are Streptococcus pneumoniae, Haemophilus influenzae and Moraxella catarrhalis. This article reviews the various mechanisms of infection and the immune system's response to them.

Soria Martinez, R. *Sensibilidad y resistencia antimicrobiana -v.1*; Cochabamba. s.n. 1995; 12.p Abstract: Este trabajo se realizo para determinar la sensibilidad y resistencia antimicrobiana de los géremenes aislados, en los cultivos realizados entre el 1ro. de Enero de 1989 al 31 de Diciembre de 1994; haciendo un total de 6886, de los cuales fueron positivos 1692, lo que corresponde al 24.5 por ciento. Se tomaron las siguientes muestras, tomando en cuenta los positivos: Hemocultivos positivos 2777, siendo el gérmen aislado en mayor número de cultivos, el Estafilococo Coagulasa negativo (37 por ciento). Líquido Cefaloraquideo, se obtuvieron 129 positivos de los cuales corresponde al Haemophilus Influenzae (66.8 por ciento). Coprocultivos positivos fueron 230, correspondiendo a la Echerichia Coli Enteropatógena Poly A el 28.2 por ciento. De los urocultivos, fueron positivos 334 siendo el gérmen mas frecuente Echerichia Coli (74.8 por ciento). Cultivos de secreciones, que incluyen líquido pleural, oídos, ojos, piel, vagina, un total de 1497, siendo el gérmen mas aislado la Echerichia Coli (36.6 por ciento). Este estudio fue realizado con el fin de analizar y valorar la respuestas de los difrentes gérmenes aislados en los cultivos, mediante el antibiograma; para así poder contar con datos globales, mediante análisis de los resultados obtenidos, del grado de sensibilidad y resistencia a los antibióticos. (AU).

Soriano A. et al. *Pathogenic significance of methicillin resistance for patients with Staphylococcus aureus bacteremia.* Clin Infect Dis. 2000; 30(2) : 368-73.p Abstract: To assess whether methicillin resistance is a microbial characteristic associated with deleterious clinical outcome, we performed a cohort study on 908 consecutive episodes of Staphylococcus aureus bacteremia and a case-control study involving 163 pairs of patients matched for preexisting comorbidities, prognosis of the underlying disease, length of hospitalization, and age. Of 908 bacteremic episodes, 225 (24.8%) were due to methicillin-resistant S. aureus (MRSA). Multivariate analysis did not reveal that methicillin resistance was an independent predictor for mortality when shock, source of bacteremia, presence of an ultimately or rapidly fatal underlying disease, acquisition of the infection in an intensive care unit (ICU), inappropriate empirical therapy, female sex, and age were taken into account. Nonetheless, methicillin resistance was an independent predictor for shock. The case-control study could not confirm that shock was linked to MRSA when prior antimicrobial therapy, inappropriate treatment, ICU residence, and female sex were considered. Our data suggest that cohort studies tend to magnify the relationship of MRSA with clinical markers of microbial pathogenicity and that this effect is a shortcoming of these kind of studies that is caused by inadequate control for underlying diseases.

Soriano F. et al. *In-vitro antimicrobial activity of HMR 3004 (RU 64004) against erythromycin A-sensitive and -resistant Corynebacterium spp. isolated from clinical specimens.* J Antimicrob Chemother. 1998; 42(5) : 647-9.p Abstract: We studied the in-vitro activity of HMR 3004 (RU 64004), a new ketolide, against 161 clinical isolates of Corynebacterium spp. including isolates resistant to erythromycin A, josamycin and lincomycin. HMR 3004 was active against all erythromycin A-sensitive isolates as well as against 75.8% and 45.4% of erythromycin A-intermediate and -resistant isolates, respectively. In contrast, HMR 3004 was active against 40 (46.5%) of 86 isolates resistant to erythromycin A, josamycin and lincomycin as well as against two isolates that were resistant to erythromycin A and lincomycin but not resistant (i.e. susceptible or intermediate) to josamycin.

Soriano J.M. et al. *Assessment of the microbiological quality and wash treatments of lettuce served in University restaurants.* Int J Food Microbiol. 2000; 58(1-2) : 123-8.p Abstract: One hundred and forty-four samples of lettuce from 16 University restaurants were analyzed. The mesophilic aerobic counts of all samples ranged from 3.01 to 7.81 log10 CFU g(-1). Results of total coliforms ranged from < 0.47 to > 3.38 log10 most probable number (MPN) g(-1). Of the lettuce samples, 25.7% harbored Escherichia coli, 22.9% Staphylococcus aureus and 84% group D streptococci. Similarly, 10.4% of the samples harbored Aeromonas hydrophila, 2.8% Pseudomonas aeruginosa, and coliforms such as 14.6% Citrobacter freundii, 8.3% Klebsiella pneumoniae, 4.2% Enterobacter cloacae and 1.4% Providencia spp. Salmonella, Shigella and E. coli O157:H7 were not detected. When sodium hypochlorite or potassium permanganate solutions were used in washing procedures, the aerobic microorganisms were reduced by more than two log units, and total coliforms by at least one log.

Spandow O. et al. *Lateral sinus thrombosis after untreated otitis media. A clinical problem—again?* Eur Arch Otorhinolaryngol. 2000; 257(1) : 1-5.p Abstract: Antimicrobial agents have greatly reduced the incidence of intracranial complications of infections of the middle ear and mastoid. Too many prescriptions and overconsumption of

antibiotics when otitis media is suspected has caused resistance to many antibiotics, leading to a pronounced and justifiable desire to reduce the widespread excessive use of antibiotics. The possible untoward consequences of a too restricted antibiotic policy, however, is illustrated by the following case of a 14-year-old boy who, after non-treatment of an ear infection, fell ill with one-sided headache and vomiting caused by a lateral sinus thrombosis. After intravenous treatment with antibiotics, anticoagulants and ventilation of the middle ear, the infection was cured without complications. This case calls attention to the symptoms of otitic complications arising outside the temporal bone. The physician must always bear in mind the possibility of an unusual event. The general treatment of endocranial complications is outlined, giving details of the treatment given in this special case. We stress that one should not be too cautious in prescribing antibiotics in otitis media.

Spatafora G.A. et al. *Regulated expression of the Streptococcus mutans dlt genes correlates with intracellular polysaccharide accumulation*. J Bacteriol. 1999; 181(8) : 2363-72.p Abstract: Intracellular polysaccharides (IPS) are glycogen-like storage polymers which contribute significantly to Streptococcus mutans-induced cariogenesis. We previously identified and cloned a locus from the S. mutans chromosome which is required for the accumulation of IPS. Sequencing of this locus revealed at least four contiguous open reading frames, all of which are preceded by a common promoter region and are transcribed in the same direction. Analysis of the amino acid sequence deduced from the first of these open reading frames (ORF1) revealed domains which are highly conserved among D-alanine-activating enzymes (DltA) in Lactobacillus rhamnosus (formerly Lactobacillus casei) and Bacillus subtilis. The deduced amino acid sequences derived from ORF2, -3, and -4 also exhibit extensive similarity to DltB, -C, and -D, respectively, in these microorganisms. However, Southern hybridization experiments indicate that this operon maps to a locus on the S. mutans chromosome which is separate from the glgP, glgA, and glgD genes, whose products are known mediators of bacterial IPS accumulation. We therefore assigned a new dlt designation to the locus which we had formerly called glg. We maintain that the dlt genes are involved in S. mutans IPS accumulation, however, since they complement a mutation in trans which otherwise renders S. mutans IPS deficient. In this study, we found that expression of the S. mutans dlt genes is growth phase dependent and is modulated by carbohydrates internalized via the phosphoenolpyruvate phosphotransferase system (PTS). We demonstrated that the S. mutans dlt genes are expressed constitutively when non-PTS sugars are provided as the sole source of carbohydrate. Consistent with a role for the PTS in dlt expression is a similar constitutive expression of the dlt genes in an S. mutans PTS mutant grown in a chemically defined medium supplemented with glucose. In summary, these findings support a novel role for the dlt gene products in S. mutans IPS accumulation and suggest that dlt expression in this oral pathogen is subject to complex mechanisms of control imposed by growth phase, dietary carbohydrate, and other factors present in the plaque environment.

Spencer R.C. *An 8 year Microbe Base survey of the epidemiology, frequency and antibiotic susceptibility of Pseudomonas aeruginosa hospital isolates in the United Kingdom*. J Antimicrob Chemother. 1996; 37(2) : 295-301.p Abstract: Over the last 8 years selected United Kingdom hospitals have contributed antimicrobial susceptibility data to a central data base called Microbe Base. During that period, data on 1,000,067 isolates have been collected, including 29,425 isolates of Pseudomonas aeruginosa. The present study focused on the epidemiology, frequency and antibiotic susceptibility of P. aeruginosa isolates (17,440) from hospitalised patients. In such patients P. aeruginosa was predominant in general surgery (20%), care of the elderly (18%), general medicine (13%), and paediatrics and neonates (10%). Ninety-five per cent of P. aeruginosa were susceptible in vitro to ceftazidime compared with 93% for piperacillin, 92% for gentamicin. 90% for ciprofloxacin, and 89% for imipenem. Excluding susceptibility data reported in 1991, there was no change in the susceptibility pattern of P. aeruginosa throughout the study period.

Spencer R.C. *Predominant pathogens found in the European Prevalence of Infection in Intensive Care Study.* Eur J Clin Microbiol Infect Dis. 1996; 15(4) : 281-5.p Abstract: A one-day point prevalence of infection analysis was undertaken in 1417 intensive care units (ICUs) (10,038 patients) in 17 western European countries. The prevalence of ICU-acquired infection was 20.6% (2064 patients), representing almost half the cases of infection. Pneumonia was the most commonly reported infection (46.9%), followed by infection of the lower respiratory tract (17.8%), urinary tract (17.6%), and blood (13.0%). Staphylococcus aureus was the most frequently isolated organism (30.1%), followed by Pseudomonas aeruginosa (28.7%), coagulase-negative staphylococci (19.1%), yeasts (17.1%), and enterococci (11.7%). As a group, the Enterobacteriaceae were the most commonly isolated organisms (34.4%). The study also revealed that resistance to antimicrobial agents is common among Staphylococcus aureus, Pseudomonas aeruginosa, and coagulase-negative staphylococci.

Sprenkels S.H. et al. *IgA antibodies in HLA-B27 associated acute anterior uveitis and ankylosing spondylitis.* Clin Rheumatol. 1996; 15 Suppl 1 : 52-6.p Abstract: Acute anterior uveitis (AAU) and ankylosing spondylitis (AS) are, like reactive arthritis (ReA), strongly associated with HLA-B27. Mucosal infections play a role in the pathogenesis of ReA. To investigate whether these microorganisms are also involved in the pathogenesis of AAU and AS, we examined blood samples from patients with AAU, AS or both, and healthy controls for presence of antibodies against Klebsiella pneumoniae (K 30), Salmonella enteritidis and S. typhimurium, Chlamydia trachomatis, Proteus mirabilis and Borrelia burgdorferi. The IgA, IgG and IgM classes of these antibodies were measured using an enzyme-linked immunosorbent assay. No significant differences were found in the frequency in which these antibodies occurred in HLA-B27 positive patients with AAU or AS and healthy controls. However, IgA antibodies against K. pneumoniae ($p < 0.01$) and IgA and IgG antibodies against P. mirabilis ($p < 0.01$ and $p < 0.05$) were detected more frequently in HLA-B27 negative patients with AAU than in healthy controls. The results of this study are in contrast with various earlier reports in which antibodies against Klebsiella strains were more frequently found in patients with HLA-B27 associated ankylosing spondylitis than in healthy controls.

Sreeramulu G. et al. *Kombucha fermentation and its antimicrobial activity.* J Agric Food Chem. 2000; 48(6) : 2589-94.p Abstract: Kombucha was prepared in a tea broth (0.5% w/v) supplemented with sucrose (10% w/v) by using a commercially available starter culture. The pH decreased steadily from 5 to 2.5 during the fermentation while the weight of the "tea fungus" and the OD of the tea broth increased through 4 days of the fermentation and remained fairly constant thereafter. The counts of acetic acid-producing bacteria and yeasts in the broth increased up to 4 days of fermentation and decreased afterward. The antimicrobial activity of Kombucha was investigated against a number of pathogenic microorganisms. Staphylococcus aureus, Shigella sonnei, Escherichia coli, Aeromonas hydrophila, Yersinia enterolitica, Pseudomonas aeruginosa, Enterobacter cloacae, Staphylococcus epidermis, Campylobacter jejuni, Salmonella enteritidis, Salmonella typhimurium, Bacillus cereus, Helicobacterpylori, and Listeria monocytogenes were found to be sensitive to Kombucha. According to the literature on Kombucha, acetic acid is considered to be responsible for the inhibitory effect toward a number of microbes tested, and this is also valid in the present study. However, in this study, Kombucha proved to exert antimicrobial activities against E. coli, Sh. sonnei, Sal. typhimurium, Sal. enteritidis, and Cm. jejuni, even at neutral pH and after thermal denaturation. This finding suggests the presence of antimicrobial compounds other than acetic acid and large proteins in Kombucha.

Sreevatsan S. et al. *Comparative Evaluation of Cleavase Fragment Length Polymorphism With PCR-SSCP and PCR-RFLP to Detect Antimicrobial Agent Resistance in Mycobacterium tuberculosis.* Mol Diagn. 1998; 3(2) : 81-91.p Abstract: Background: Several molecular methods potentially useful in the detection of Mycobacterium tuberculosis mutations, specifically in rpoB and katG, were compared. Methods and Results: DNA from 24 M. tuberculosis clinical isolates, with mutations associated with resistance to rifampin and/or isoniazid, was analyzed. A 128 bp amplicon, spanning the 81 bp rpoB region containing most mutations leading to rifampin resistance, was analyzed by polymerase chain reaction-single-strand conformation polymorphism (PCR-SSCP) and a recently introduced mutation scanning method, cleavase fragment length polymorphism (CFLP) analysis. Also, a 350 bp amplicon encompassing that region was analyzed by the CFLP method. CFLP analysis of the 350 bp amplicon (23 isolates) identified 14 of 17 mutants; however, CFLP analysis of the 128 bp amplicon accurately identified all mutants as did PCR-SSCP with interpretative difficulty for two codon 513 mutations. CFLP and PCR-restriction fragment length polymorphism (RFLP) analyses of a 623 bp amplicon encompassing katG codons 315 and 463 showed that the CFLP method identified single and dinucleotide codon 315 substitutions with or without codon 463 (CGG—>CTG) changes, whereas PCR-RFLP (MspI) missed one codon 315 polymorphism (AGC—>ACA) in three isolates. Conclusion: Both PCR-SSCP and CFLP analyses were sensitive in identifying all mutations on short sequences in the rpoB mutants. CFLP appears to be more efficient than SSCP and RFLP for the detection of mutations in large amplicons.

Sriprachya-Anunt S. et al. *Infections complicating pulsed carbon dioxide laser resurfacing for photoaged facial skin*. Dermatol Surg. 1997; 23(7) : 527-35; discussion 535-6.p Abstract: BACKGROUND: With proper technique and instrumentation, laser resurfacing for facial wrinkles has been found to be highly effective and relatively safe. Most, if not all, of the noninfectious complications such as pigmentary changes, scarring, and persistent erythema can either be avoided or managed with appropriate therapy. Postoperative infections, on the other hand, may develop despite proper technique and instrumentation. Without proper management, they may cause significant physical morbidity and psychological distress defying the expected benefit of the procedure. OBJECTIVE: To quantify the incidence and to study the characteristics of infections arising after laser resurfacing for facial wrinkles with pulsed carbon dioxide laser treatment. METHOD: A retrospective study was carried out by reviewing the records of all patients undergoing laser resurfacing for facial wrinkles from January 1, 1995 to April 30, 1996. An infection is defined as a positive culture in the presence of signs or symptoms of an infection. RESULTS: Over 16 months, 395 procedures were performed and 17 cases of culture-proven infection recorded, an incidence of 4.3%. All patients had symptoms starting between days 2 and 10 after the operation. Over half of the patients had multiple infections with two to three microorganisms. Pseudomonas aeruginosa was the most common causative agent, found in 41% of all infected cases, followed by Staphylococcus aureus (35%), S. epidermidis (35%), and Candida species (24%). Multiple drug-resistant, gram-negative bacteria were found in four cases, implicating the possibility of hospital-acquired infections. Almost all isolates of gram-positive bacteria were resistant to both erythromycin and penicillin, but not oxacillin. With proper treatment, most patients healed normally. Only one patient had persistent, multiple atrophic scars due to locally disseminated herpes simplex infection despite proper prophylaxis and treatment. CONCLUSIONS: Postoperative infection is uncommon and manageable with early recognition and proper treatment. The types of infectious agents being found are very similar to those reported in burn patients. This complication has been found to be much more common in patients undergoing full face resurfacing and those using a bioocclusive dressing postoperatively. With comprehensive preventive and management measures, it is likely that this type of uncommon, yet distressful, complication can be avoided and more successfully treated. Recommendations are made for prevention and management of suspected postoperative infections.

Staendner L.H. et al. *Identification of Salmonella typhi promoters activated by invasion of eukaryotic cells.* Mol Microbiol. 1995; 18(5) : 891-902.p Abstract: The interaction of pathogenic microorganisms with host tissues, and the underlying genetic events which regulate these interactions, are difficult to analyse where no suitable animal model exists. The approach described here, for obtaining information on the genes involved in these interactions, employs an infection system based on the invasion of Henle cells by Salmonella typhi to select promoter-containing DNA sequences able to activate gene expression inside eukaryotic cells. Several DNA fragments exhibiting different promoter strengths and extent of selective activation within eukaryotic cells were identified. Three were selected and characterized according to the expression level of the reporter gene, the polynucleotide sequence, the transcription start, and the dependence upon regulatory proteins. All fragments gave much stronger expression of the reporter gene when the recombinant S. typhi carrier strains invaded cells compared with the expression measured in growth medium. One promoter-containing region exhibited sequence homology to sigma 54-dependent promoters, whereas another appears to be dependent on the stationary-phase RNA polymerase subunit sigma s. S. typhi containing the S1 subunit gene of pertussis toxin cloned under the control of these promoters, selectively expressed the S1 subunit following infection of different phagocytic and non-phagocytic cell lines of human or murine origin. Deletion and point mutant derivatives of two promoters enabled the identification of the main motif required for promoter activity. This method may be helpful for the analysis of pathogenesis in organisms previously difficult to study because of the lack of a convenient animal model, and could provide insights into the chronology and topology of gene expression during infection, including a possible genetic basis for tissue tropism.

Stalam M. et al. *Antibiotic agents in the elderly.* Infect Dis Clin North Am. 2000; 14(2) : 357-69.p Abstract: Changes that occur in the pharmacology of drugs in the elderly must be considered in the use of antimicrobial agents. Although absorption of orally administered drugs is not affected in a significant way, renal function decreases, drug-drug interactions increase, compliance with regimens may be decreased, and drug toxicity is increased. The most frequent infections occurring in the elderly are pneumonia, urinary tract infection, and soft-tissue infection. CDAD is usually a complication of antibiotic therapy. Pneumonia can be categorized as community-acquired, LTCF, and hospital-acquired. Therapeutic approaches vary according to which of these sites is involved. Urinary tract infection is divided into upper tract infection, lower tract infection, and asymptomatic bacteriuria. Upper tract infection is treated for a longer period than lower tract infection; with few exceptions, asymptomatic bacteriuria is usually not treated. Soft-tissue infection is usually caused by an infected pressure ulcer or cellulitis (which may be a complication of a diabetic foot ulcer or an ulcer due to peripheral vascular disease). These infections have different microbial causes and require different therapeutic approaches.

Stamm W.E. *Potential for antimicrobial resistance in Chlamydia pneumoniae.* J Infect Dis. 2000; 181 Suppl 3 : S456-9.p Abstract: Antimicrobial resistance has not yet been described in wild type Chlamydia pneumoniae isolates, nor has selective emergence of resistance in the laboratory after exposure to subinhibitory concentrations of antibiotic. However, few clinical isolates have been tested for resistance, especially strains with resistance phenotypes (i.e., those associated with clinical failure or persistence). More widespread testing of such strains is needed. Further understanding of antimicrobial resistance in chlamydiae would benefit from the development of standardized methods. Further, more physiologic testing methodologies that more closely mimic the chronic intracellular infection usually being treated in vivo would be of value. Animal models demonstrate persistence of C. pneumoniae after antimicrobial therapy and could be used to better define the clinical correlates of in vitro testing.

Staneck J.L. *Impact of technological developments and organizational strategies*

on clinical laboratory cost reduction. Diagn Microbiol Infect Dis. 1995; 23(1-2) : 61-73.p Abstract: Health care reform efforts, largely under the aegis of managed health care initiatives, have prompted clinical laboratories to increase efficiency and reduce both expenditures and test turnaround times. The adoption of newer technologies is viewed as a mechanism of achieving the latter objectives, but direct and indirect costs and outcomes are often difficult to project. Issues explored in this article include the impact on a large university hospital-based clinical microbiology laboratory following the application of various technological approaches to organism recognition and susceptibility testing and the consolidation of certain testing services. Included are applications of an automated blood culture system; radiometric detection, identification, and susceptibility testing of mycobacteria; and the use of molecular probes to identify various microorganisms. Assessment was made through retrospective review of direct costs, estimates of average test report turnaround times, work flow changes, and real or perceived outcomes. Both the application of technology per se and consolidation of an independent virology service into the general microbiology laboratory enabled improvement in test report times and led to direct or indirect cost reduction. Managerial strategies to bring about organization changes throughout all clinical laboratories in response to a major hospital-wide cost reduction program are also presented together with financial outcomes achieved.

Stanek R.J. et al. *A 20-year epidemiological study of pneumococcal meningitis.* Clin Infect Dis. 1999; 28(6) : 1265-72.p Abstract: We conducted a retrospective analysis of 55 community-acquired Streptococcus pneumoniae meningitis illnesses in Huntington, West Virginia, from 1978 to 1997. Fourteen (36.8%) of 38 adults and 2 (11.8%) of 17 children died. Serotypes 6, 23, 3, and 18 accounted for 20 (41.7%) of 48 strains available for serotyping. Of 40 strains available for antimicrobial susceptibility testing, 1 serotype 19 and 1 serotype 23 strain showed intermediate resistance and a second serotype 23 strain showed high resistance to penicillin; all three patients survived. The case-fatality rates among adults who received penicillin alone, gentamicin in combination, or vancomycin and cephalosporin together were 57.1%, 55.5%, and 60%, respectively, and among those who received chloramphenicol or a third-generation cephalosporin, they were 11.1% or nil, respectively. No child died who received chloramphenicol or vancomycin. Two (33%) of 6 children died who received a third-generation cephalosporin; both were critically ill when initially treated. No child and one adult had received pneumococcal vaccine prior to becoming ill.

Stanford D. et al. *Human immunodeficiency virus-related primary cutaneous aspergillosis.* Australas J Dermatol. 2000; 41(2) : 112-6.p Abstract: A 31-year-old Caucasian man with AIDS developed a crusted violaceous plaque under adhesive tape near a central venous catheter insertion site. Histological examination demonstrated a ruptured hair follicle containing collections of fungal hyphae typical of Aspergillus spp. A culture of the biopsy material grew Aspergillus fumigatus. The patient responded to removal of the catheter and the occlusive dressing, in addition to itraconazole therapy. Aspergillosis must be considered in the differential diagnosis of cutaneous lesions in human immunodeficiency virus-infected patients, in particular when the lesion occurs under adhesive tape or an occlusive dressing.

Stebbings A.E. et al. *Hospital acquired pneumonia in the medical intensive care unit—a prospective study.* Singapore Med J. 1999; 40(8) : 508-12.p Abstract: AIM OF STUDY: The aim of the study was to define the prevalence, risk factors, spectrum of organisms and sensitivity patterns, and the outcome in patients with severe hospital acquired pneumonia (HAP) in the Medical Intensive Care Unit (SCU) in a hospital in Singapore. METHOD: Consecutive patients admitted to the MICU over a 6-month period were studied and assessed daily to determine whether patients had developed HAP based on defined clinical criteria. Sputum or endotracheal aspirate was obtained and results recorded from each patient on admission and every subsequent three days throughout the stay in the MICU. Mortality during hospital stay was the main outcome measure recorded. RESULTS: A total of 136 patients (150 admissions) were studied; 24 patients were identified as having HAP. The prevalence of HAP was 17% [both ventilator-associated pneumonia (VAP) and pneumonia acquired from the ward (WAP)]. Cerebral disease was the main risk factor for VAP (OR 4.94, 95% CI 1.33-18.4). The spectrum of organisms which caused HAP were polymicrobial, Klebsiella pneumoniae, Pseudomonas aeruginosa, methicillin-resistant Staphylococcus aureus and coagulase negative Staphylococcus. The mortality of patients with VAP and WAP were 72.7% and 76.9% respectively. CONCLUSION: This study concludes that HAP in the MICU is common with a high mortality. The spectrum of organisms was comparable to previous studies.

Steed C.J. *Common infections acquired in the hospital: the nurse's role in prevention*. Nurs Clin North Am. 1999; 34(2) : 443-61.p Abstract: This article reviews the epidemiology and prevention strategies for the four most common hospital-acquired infections-urinary tract, intravascular-device pneumonia, and surgical site infections. The focus of discussion is the nurse's role in preventing infection.

Steele R.W. et al. *Colonization with antibiotic-resistant Streptococcus pneumoniae in children with sickle cell disease.* J Pediatr. 1996; 128(4) : 531-5.p Abstract: OBJECTIVE: Because of susceptibility to severe pneumococcal infection, children with sickle cell disease (SCD) routinely receive penicillin prophylaxis. Increasing rates of penicillin resistance have been reported throughout the world. Our objective was to assess the prevalence of nasopharyngeal colonization with Streptococcus pneumoniae and to assess the antimicrobial susceptibility of the organisms in children with SCD. STUDY DESIGN: Nasopharyngeal cultures for S. pneumoniae were obtained from all children with SCD attending clinics in a statewide university-based network. Background colonization rates were determined in children attending day care centers in some of the same locations. All recovered S. pneumoniae organisms were tested for susceptibility to penicillin, and all resistant strains were examined for susceptibility to other antibiotics. RESULTS: Overall nasopharyngeal pneumococcal colonization rates among children with SCD were 12%. Colonization was associated with age less than 2 years ($p < 0.001$) and day care attendance for more than 20 hr/wk ($p = 0.00005$). More than half of these strains (62%) were resistant to penicillin, 33% having intermediate resistance (minimal inhibitory concentration 0.06 to 1 microgram/ml) and 29%, high level resistance (minimal inhibitory concentration > or = 2.0 microgram/ml). Penicillin resistance was associated with penicillin prophylaxis ($p < 0.01$). Many of these organisms were also resistant to other classes of antibiotics. CONCLUSIONS: Although penicillin prophylaxis and pneumococcal vaccine for patients with SCD have reduced overall nasopharyngeal colonization and disease caused by S. pneumoniae ($p < 0.001$), a higher percentage of colonizing strains are now resistant both to penicillin and to other antimicrobial agents ($p < 0.01$). Newer strategies for preventing disease and early management of suspected pneumococcal infection in these children must be developed.

Stefanska J.Z. et al. *Antimicrobial activity of organic thiosulfates (Bunte salts).* Pharmazie. 1998; 53(3) : 190-2.p Abstract: A number of organic thiosulfates (Bunte salts) were prepared from appropriate primary bromides or iodides. In the case of substrates with long aliphatic chains, an addition of benzyltrimethylammonium chloride as phase transfer catalyst was very successful. The Bunte salts obtained were tested for antibacterial and fungicidal activity by means of the agar disc-diffusion method and by assignation of the minimum inhibitory concentrations (MIC). It was found that the microorganisms Proteus vulgaris, Candida albicans and Staphylococcus aureus showed the highest sensitivity. Biological activity of the compounds studied was dependent on the length of the aliphatic chain. Among the investigated compounds, aliphatic thiosulfates with 10-13 carbon atom chain were the most potent.

Stein G.E. *Fosfomycin tromethamine: single-dose treatment of acute cystitis.* Int J Fertil Womens Med. 1999; 44(2) : 104-9.p Abstract: Fosfomycin tromethamine is an oral antimicrobial indicated for the treatment of uncomplicated lower urinary tract infections (UTIs). This agent is active in the urine against common uropathogens that are associated with cystitis in women, including organisms resistant to other antibiotics. A single dose of fosfomycin tromethamine is well absorbed and produces a therapeutic concentration in the urine for one to three days. Comparative clinical trials suggest that a single 3.0-g dose of fosfomycin tromethamine is as clinically effective as 7- to 10-day treatment regimens of standard agents such as nitrofurantoin, norfloxacin, and trimethoprim/sulfamethoxazole used to treat UTIs. Fosfomycin tromethamine is well tolerated and appears safe for use during pregnancy. Quality-of-life advantages, such as enhanced compliance and convenience, are also important aspects of fosfomycin tromethamine therapy.

Steinberg D. et al. *Kinetic properties of glucosyltransferase adsorbed onto saliva-coated hydroxyapatite.* Artif Cells Blood Substit Immobil Biotechnol. 1996; 24(5) : 553-66.p Abstract: Results from previous studies have shown that several properties of glucosyltransferase (GTF) adsorbed onto saliva-coated hydroxyapatite beads differ from those of GTF in solution. For example: thermostability, pH-activity dependency, sensitivity to inhibitors. The aim of this study was to compare the kinetics of the adsorbed GTF with its kinetic properties in solution. Hydroxyapatite beads were coated with human parotid saliva (sHA). Following washes, cell-free GTF enzyme from Streptococcus sobrinus 6715 (S. sobrinus 6715) or Streptococcus mutans GS-5 (S. mutans GS-5) was adsorbed onto sHA. The GTF-coated sHA were then incubated with radiolabeled sucrose for intervals of 5-360 minutes and the amount of glucans synthesized in situ by the adsorbed GTF was determined and compared with that produced in solution. The adsorbed GTF (from S. sobrinus 6715) exhibited a sharp increase in glucan production within the first 5 minutes of incubation while surface-bound GTF of S. mutans GS-5 displayed an initial burst of activity within the first 15 minutes of incubation. During the next 6 hours (duration of experiment) the amount of glucan on the beads did not increase with either enzyme. In contrast, the kinetic profile of the two GTFs in solution demonstrated a linear increase in the amount of glucans formed, with no initial burst effect. The results indicate that the rapid formation of glucans by GTF adsorbed onto sHA could have implications for colonization by oral microorganisms on tooth surfaces. The accelerated synthesis of glucan on tooth surfaces may affect the microbiology of the dental plaque, and might also influence the movement of substances, such as acids and antiplaque agents, across the acquired pellicle and dental plaque.

Stenfors L.E. et al. *Identification of Streptococcus pyogenes on tonsillar epithelium during infection.* Acta Otolaryngol Suppl. 1997; 529 : 212-4.p Abstract: Epithelial cells were swabbed from the tonsillar surfaces of 5 patients with acute tonsillitis culture-positive for Streptococcus pyogenes. By using 10 nm gold particles conjugated to antiserum to S. pyogenes it was possible to trace the actual microorganisms when examined in a transmission electron microscope. The S. pyogenes bacteria, usually in pairs, were attached to the epithelial surface by their pili. The bacteria often formed a hollow in the epithelial cell surface. Coccus-shaped bacteria expressing positive affinity to immunogold-labelled antiserum were intermingled with bacteria, often rods, having no affinity whatsoever to the antiserum. With the immunocytological technique outlined in this study it is possible to study more closely cellular/bacterial adhesion mechanisms.

Stephan T.E. et al. *Antimicrobial activity of the semisynthetic compound, hexahydrocolupulone.* J Antimicrob Chemother. 1998; 42(4) : 519-22.p Abstract: In this study we demonstrate that hexahydrocolupulone (HHC) more effectively inhibits the growth in vitro of Gram-positive organisms than Mycobacterium tuberculosis or Escherichia coli. Vancomycin-resistant Enterococcus faecium, methicillin-resistant Staphylococcus aureus, and coagulase-negative staphylococci were inhibited by HHC at concentrations < or = 4.06 mg/L. Growth inhibition profiles varied according to the microorganism evaluated (static for S. aureus and bactericidal for Bacillus subtilis).

Stermitz F.R. et al. *Synergy in a medicinal plant: antimicrobial action of berberine potentiated by 5'-methoxyhydnocarpin, a multidrug pump inhibitor.* Proc Natl Acad Sci U S A. 2000; 97(4) : 1433-7.p Abstract: Multidrug resistance pumps (MDRs) protect microbial cells from both synthetic and natural antimicrobials. Amphipathic cations are preferred substrates of MDRs. Berberine alkaloids, which are cationic antimicrobials produced by a variety of plants, are readily extruded by MDRs. Several Berberis medicinal plants producing berberine were found also to synthesize an inhibitor of the NorA MDR pump of a human pathogen Staphylococcus aureus. The inhibitor was identified as 5'-methoxyhydnocarpin (5'-MHC), previously reported as a minor component of chaulmoogra oil, a traditional therapy for leprosy. 5'-MHC is an amphipathic weak acid and is distinctly different from the cationic substrates of NorA. 5'-MHC had no antimicrobial activity alone but strongly potentiated the action of berberine and other NorA substrates against S. aureus. MDR-dependent efflux of ethidium bromide and berberine from S. aureus cells was completely inhibited by 5'-MHC. The level of accumulation of berberine in the cells was increased strongly in the presence of 5'-MHC, indicating that this plant compound effectively disabled the bacterial resistance mechanism against the berberine antimicrobial.

Stevenson K.B. et al. *Standardized surveillance of hemodialysis vascular access infections: 18-month experience at an outpatient, multifacility hemodialysis center.* Infect Control Hosp Epidemiol. 2000; 21(3) : 200-3.p Abstract: OBJECTIVE: To develop a standardized surveillance system for monitoring hemodialysis vascular-access infections in order to compare infection rates between outpatient sites and to assess the effectiveness of infection control interventions. DESIGN: Prospective descriptive analysis of incidence infection rates. SETTING: An outpatient hemodialysis center with facilities in Idaho and Oregon. PATIENTS: All outpatients receiving chronic outpatient hemodialysis. RESULTS: There were 38,096 hemodialysis sessions (31,603 via permanent fistulae or grafts, 5,060 via permanent tunneled central catheters, and 1,433 via temporary catheters) during an 18-month study period in 1997 to 1998. We identified 176 total infections, for a rate of 4.62/1,000 dialysis sessions (ds). Of the 176, 80 involved permanent fistulae or grafts (2.53/1,000 ds), 69 involved permanent tunneled central catheter infections (13.64/1,000 ds), and 27 involved temporary catheter infections (18.84/1,000 ds). There were 35 blood-stream infections (0.92/1,000 ds) and 10 episodes of clinical sepsis (0.26 /1,000 ds). One hundred thirty-one vascular-site infections without bacteremia were identified (3.44/1,000 ds), including 65 permanent fistulae or graft infections (2.06/1,000 ds), 42 permanent tunneled central catheter infections (8.3/1,000 ds), and 24 temporary catheter infections (16.75/1,000 ds). CONCLUSIONS: Infection rates were highest among temporary catheters and lowest among permanent native arteriovenous fistulae or synthetic grafts. This represents the first report of extensive incidence data on hemodialysis vascular access infections and represents a standardized surveillance and data-collection system that could be implemented in hemodialysis facilities to allow for reliable data comparison and benchmarking.

Steward C.D. et al. *Comparison of agar dilution, disk diffusion, MicroScan, and Vitek antimicrobial susceptibility testing methods to broth microdilution for detection of fluoroquinolone-resistant isolates of the family Enterobacteriaceae.* J Clin Microbiol. 1999; 37(3) : 544-7.p Abstract: Fluoroquinolone resistance appears to be increasing in many species of bacteria, particularly in those causing nosocomial infections. However, the accuracy of some antimicrobial susceptibility testing methods for detecting fluoroquinolone resistance remains uncertain. Therefore, we compared the accuracy of the results of agar dilution,

disk diffusion, MicroScan Walk Away Neg Combo 15 conventional panels, and Vitek GNS-F7 cards to the accuracy of the results of the broth microdilution reference method for detection of ciprofloxacin and ofloxacin resistance in 195 clinical isolates of the family Enterobacteriaceae collected from six U.S. hospitals for a national surveillance project (Project ICARE [Intensive Care Antimicrobial Resistance Epidemiology]). For ciprofloxacin, very major error rates were 0% (disk diffusion and MicroScan), 0.9% (agar dilution), and 2.7% (Vitek), while major error rates ranged from 0% (agar dilution) to 3.7% (MicroScan and Vitek). Minor error rates ranged from 12.3% (agar dilution) to 20.5% (MicroScan). For ofloxacin, no very major errors were observed, and major errors were noted only with MicroScan (3.7% major error rate). Minor error rates ranged from 8.2% (agar dilution) to 18.5% (Vitek). Minor errors for all methods were substantially reduced when results with MICs within +/-1 dilution of the broth microdilution reference MIC were excluded from analysis. However, the high number of minor errors by all test systems remains a concern.

Stewart P.C. et al. *Superior vena cava obstruction and liver transplantation in a child.* Paediatr Anaesth. 2000; 10(2) : 206-9.p Abstract: We report a case of superior vena cava obstruction in a child, which was probably secondary to long-term central venous cannulation. The obstruction was asymptomatic preoperatively, but became evident during liver transplantation, and complicated the intraoperative management. There is one other case report of this occurring in an adult in similar circumstances, and we believe that ours is the first report of such a presentation in the paediatric age group.

Stinear T. et al. *Identification and characterization of IS2404 and IS2606: two distinct repeated sequences for detection of Mycobacterium ulcerans by PCR.* J Clin Microbiol. 1999; 37(4) : 1018-23.p Abstract: Molecular analysis of Mycobacterium ulcerans has revealed two new insertion sequences (ISs), IS2404 and IS2606. IS2404 was identified by complete sequencing of a previously described repetitive DNA segment from M. ulcerans. This element is 1,274 bp long, contains 12-bp inverted repeats and a single open reading frame (ORF) potentially encoding a protein of 327 amino acids (aa), and apparently generates 7-bp direct repeats upon transposition. Amino acid similarity was found between the putative transposase and those encoded by ISs in other bacterial sequences from Aeromonas salmonicida (AsIs1), Escherichia coli (H repeat element), Vibrio cholerae (VcIS1), and Porphyromonas gingivalis (PGIS2). The second IS, IS2606, was discovered by sequence analysis of a HaeIII fragment of M. ulcerans genomic DNA containing a repetitive sequence. This element is 1,404 bp long, with 12-bp inverted repeats and a single ORF potentially encoding a protein of 445 aa. Database searches revealed a high degree of amino acid identity (70%) with the putative transposase of IS1554 from M. tuberculosis. Significant amino acid identity (40%) was also observed with transposases from several other microorganisms, including Rhizobium meliloti (ISRm3), Burkholderia cepacia (IS1356), Corynebacterium diphtheriae, and Yersinia pestis. PCR screening of DNA from 45 other species of mycobacteria with primers for IS2404 confirm that this element is found only in M. ulcerans. However, by PCR, IS2606 was also found in Mycobacterium lentiflavum, another slow-growing member of the genus Mycobacterium that is apparently genetically distinct from M. ulcerans. Testing the sensitivity of PCR based on IS2404 and IS2606 primers demonstrated the ability to detect 0.1 and 1 M. ulcerans genome equivalents, respectively. The ability to detect small numbers of cells by using two gene targets will be particularly useful for analyzing environmental samples, where there may be low concentrations of M. ulcerans among large numbers of other environmental mycobacteria.

Stoicheva M. et al. *A study on the aerobic intestinal microflora in patients with salmonellosis and shigellosis.* Folia Med (Plovdiv). 1997; 39(4) : 87-92.p Abstract: Human intestinal microflora provides substantial protection of the body against intestinal pathogens and affects the course and outcome of intestinal infections with diarrheal syndrome. We studied the aerobic intestinal microflora in 120 patients with salmonellosis and 60 patients with shigellosis. Intestinal microflora was determined qualitatively assessing the relative share of E. coli and other aerobic representatives of the potentially pathogenic microorganisms. Disturbances of the aerobic intestinal microflora were found in 76% of the patients with salmonellosis and 80% of the patients with shigellosis in the acute stage of the disease. They occurred more commonly and were graver in the severe clinical forms of intestinal infections. Their frequency in convalescent bacterial carriers was greater.

Stoor P. et al. *Antibacterial effects of a bioactive glass paste on oral microorganisms.* Acta Odontol Scand. 1998; 56(3) : 161-5.p Abstract: Bioactive glasses contain oxides of calcium, sodium, phosphorus, and silicon in a proportion that provides the material with surface activity and concomitantly with the property of forming a strong bond with bone. Bioactive glasses have been tested as bone substitutes in different clinical situations. In an aqueous environment, Ca2+, Na+, PO4(3-) , and Si4+ are released from the glass, resulting in a rise in pH and in osmotic pressure in its vicinity. Since these are factors that potentially influence the viability of oral microorganisms at the dentogingival margin, we studied the effects of bioactive glass S53P4 on the oral microorganisms Actinobacillus actinomycetemcomitans, Porphyromonas gingivalis, Actinomyces naeslundii, Streptococcus mutans, and Streptococcus sanguis. This was done by incubating each microbe in a suspension, in the presence of bioactive glass S53P4 in powder form. A. naeslundii was found to lose its viability within 10 min under the experimental conditions. A. actinomycetemcomitans, P. gingivalis, and S. mutans lost their viability within 60 min. Also for S. sanguis a significant loss of viability was seen within 60 min, but it was the only microbe that had any viable cells left after 60 min. Thus, in aqueous solutions the powdered bioactive glass S53P4 appears to have a broad antimicrobial effect on microorganisms of both supra- and subgingival plaque. Consequently, it could be useful as an ingredient in tooth-care products that may have beneficial effects on oral health both from a cariologic and a periodontal point of view.

Stormer F.C. et al. *Citrinin, ochratoxin A and iron. Possible implications for their biological function and induction of nephropathy.* Mycopathologia. 1996; 134(2) : 103-7.p Abstract: Experiments with Neisseria meningitidis have shown that Fe3+ to some extent can reverse the toxicity of ochratoxin A and citrinin, as measured by inhibition zones around impregnated paper discs. Similar phenomena were observed with the less toxic ochratoxin B. Zearalenone also inhibited growth, but its effect was not counteracted by iron. The mycotoxins aflatoxin B1 and deoxynivalenol did not inhibit bacterial growth at all. Desferal (deferoxamine) also inhibited growth of meningococci, but iron totally abolished this inhibition. The results indicate that ochratoxin A and citrinin interfere with iron metabolism in this organism but that other additional toxic mechanisms are involved as well since a marked growth inhibition by both toxins was also observed in the presence of iron. One function of ochratoxin A and citrinin in nature could consequently be to affect the iron uptake of other competing microorganisms. Since both toxins interfere with iron and both cause nephropathy, a possible connection between these properties and lipid peroxidation is also briefly discussed.

Stoutenbeek C.P. et al. *Nonantibiotic measures in the prevention of ventilator-associated pneumonia.* Semin Respir Infect. 1997; 12(4) : 294-9.p Abstract: Aspiration of oropharyngeal and/or gastrointestinal (GI) contents is the main cause of ventilator-associated pneumonia. A number of nonantibiotic measures have been proposed to prevent aspiration eg, drainage of subglottic secretions or the semirecumbent position or to prevent gastric microbial overgrowth by stress-ulcer prophylaxis with sucralfate or early enteral feeding. Critical review of the studies shows that subglottic drainage does not prevent colo-

nization or infection of the respiratory tract with intensive care unit-acquired Enterobacteriaceae or Pseudomonas aeruginosa. The effect of subglottic drainage on primary endogenous infections caused by Staphalococcus aureus and Streptococcus spp in patients not receiving antibiotics is only found in a post-hoc subgroup analysis and might reflect differences in carriage of community-acquired potentially pathogenic microorganisms (PPM) caused by previous antibiotic treatment, rather than a true treatment effect. The semirecumbent position may reduce the incidence of aspiration, particularly in patients without a nasogastric tube, but the aspiration rate remains high even in the short observation periods of the studies. There is no evidence that it reduces the ventilator-associated pneumonia rate. Sucralfate may reduce the increased pneumonia rate caused by H2-antagonists and/or antacids, but it remains to be proven whether it is superior to placebo. Sucralfate has no effect on the oropulmonary route of infection and has therefore no effect on early-onset (primary endogenous) pneumonia, which is characteristically caused by PPM carried in the oropharynx. Early enteral feeding is preferable to total parenteral feeding. However, there is limited evidence that it prevents ventilator-associated pneumonia. The studies showing a benefit of early enteral feeding were relatively small studies, partly in nonventilated patients, and used poorly defined criteria for pneumonia. The oropulmonary route is the most important route in the pathogenesis of pneumonia. Preventive strategies (both antibiotic and nonantibiotic strategies) have to block both the oropulmonary route and the gastropulmonary route to be fully effective. Because microaspiration cannot be fully prevented in critically ill patients, preventive strategies should attempt to eliminate PPM from the oropharynx and GI-tract.

Stover C.K. et al. *Complete genome sequence of Pseudomonas aeruginosa PA01, an opportunistic pathogen.* Nature. 2000; 406(6799) : 959-64.p Abstract: Pseudomonas aeruginosa is a ubiquitous environmental bacterium that is one of the top three causes of opportunistic human infections. A major factor in its prominence as a pathogen is its intrinsic resistance to antibiotics and disinfectants. Here we report the complete sequence of P. aeruginosa strain PAO1. At 6.3 million base pairs, this is the largest bacterial genome sequenced, and the sequence provides insights into the basis of the versatility and intrinsic drug resistance of P. aeruginosa. Consistent with its larger genome size and environmental adaptability, P. aeruginosa contains the highest proportion of regulatory genes observed for a bacterial genome and a large number of genes involved in the catabolism, transport and efflux of organic compounds as well as four potential chemotaxis systems. We propose that the size and complexity of the P. aeruginosa genome reflect an evolutionary adaptation permitting it to thrive in diverse environments and resist the effects of a variety of antimicrobial substances.

Stratchounski L.S. et al. *Antimicrobial resistance of Streptococcus pneumoniae isolated from healthy children in day-care centers: results of a multicenter study in Russia.* Pediatr Infect Dis J. 2000; 19(3) : 196-200.p Abstract: BACKGROUND: It has been previously shown that study of susceptibility of nasopharyngeal isolates in healthy carriers can predict resistance in clinical isolates. The purpose of this multicenter study was to determine the carriage rate of Streptococcus pneumoniae in healthy children attending day-care centers in Moscow, Smolensk and Yartsevo, Russia, and in vitro activity of penicillin G, amoxicillin/clavulanate, cefaclor, erythromycin, roxithromycin, clarithromycin and trimethoprim-sulfamethoxazole (TMP-SMX) against representative isolates. METHODS: Included in this study were 305 pneumococcal isolates from 733 children attending 9 day-care centers in Moscow, Smolensk and Yartsevo. All children enrolled in this study were <7 years of age. MICs of selected antimicrobials were determined by Etest. Serotyping of selected pneumococcal isolates was done with pool and type antisera. RESULTS: The carriage rate of S. pneumoniae in the 3 centers varied from 44.9% to 66.0% (mean, 55.9%). Susceptibility testing was performed with 305 (74.4%) of 410 isolates. Only 23 (7.5%) of 305 pneumococcal isolates were penicillin-intermediate (range, 2.8 to 12.8%) with no penicillin-resistant strains. All tested pneumococci were susceptible to amoxicillin/clavulanate. Macrolides possessed comparable activity against S. pneumoniae, at 4.6% resistant strains for both erythromycin (range, 1.1 to 17.1%) and clarithromycin (range, 1.7 to 17.1%). The highest level of resistance was observed with TMP-SMX, 53.4% (range, 43.8 to 70.9%). Of 23 strains 20 (87.0%) with intermediate resistance to penicillin were serotyped. The most prevalent serotype was 14 (5 isolates), followed by serogroups 19 (4) and 23 (4). CONCLUSIONS: Resistance to penicillin, other beta-lactams and macrolides does not seem to be a problem for Russia now. The high level of resistance to TMP-SMX considerably restricts its usage for the treatment of pneumococcal infections.

Straus W.L. et al. *Antimicrobial resistance and clinical effectiveness of co-trimoxazole versus amoxycillin for pneumonia among children in Pakistan: randomised controlled trial. Pakistan Co-trimoxazole Study Group.* Lancet. 1998; 352(9124) : 270-4.p Abstract: BACKGROUND: Co-trimoxazole is widely used in treatment of paediatric pneumonia in developing countries, but drug resistance may decrease its effectiveness. We studied the effectiveness of co-trimoxazole compared with that of amoxycillin in pneumonia therapy, and assessed the clinical impact of co-trimoxazole resistance. METHODS: We recruited 595 children, aged 2-59 months, with non-severe or severe pneumonia (WHO criteria) diagnosed in the outpatient wards of two urban Pakistan hospitals. Patients were randomly assigned on a 2:1 basis co-trimoxazole (n=398) or amoxycillin (n=197) in standard WHO doses and dosing schedules, and were monitored in study wards. The primary outcome was inpatient therapy failure (clinical criteria) or clinical evidence of pneumonia at outpatient follow-up examination. FINDINGS: There were 92 (23%) therapy failures in the co-trimoxazole group and 30 (15%) in the amoxycillin group (p=0.03)-26 (13%) versus 12 (12%) among children with non-severe pneumonia (p=0.856) and 66 (33%) versus 18 (18%) among those with severe pneumonia (p=0.009). For patients with severe pneumonia, age under 1 year (p=0.056) and positive chest radiographs (p=0.005) also predicted therapy failure. There was no significant association between antimicrobial minimum inhibitory concentration and outcome among bacteraemic children treated with co-trimoxazole. INTERPRETATION: Co-trimoxazole provided effective therapy in non-severe pneumonia. For severe, life-threatening pneumonia, however, co-trimoxazole is less likely than amoxycillin to be effective.

Strausbaugh L.J. et al. *Antimicrobial resistance in long-term-care facilities.* Infect Control Hosp Epidemiol. 1996; 17(2) : 129-40.p Abstract: During the last quarter century, numerous reports have indicated that antimicrobial resistance commonly is encountered in long-term-care facilities (LTCFs). Gram-negative uropathogens resistant to penicillin, cephalosporin, aminoglycoside, or fluoroquinolone antibiotics and methicillin-resistant Staphylococcus aureus have received the greatest attention, but other reports have described the occurrence of multiply-resistant strains of Haemophilus influenzae and vancomycin-resistant enterococci (VRE) in this setting. Antimicrobial-resistant bacteria may enter LTCFs with colonized patients transferred from the hospital, or they may arise in the facility as a result of mutation or gene transfer. Once present, resistant strains tend to persist and become endemic. Rapid dissemination also has been documented in some facilities. Person-to-person transmission via the hands of healthcare workers appears to be the most important means of spread. The LTCF patients most commonly affected are those with serious underlying disease, poor functional status, wounds such as pressure sores, invasive devices such as urinary catheters, and prior antimicrobial therapy. The presence of antimicrobial-resistant pathogens in LTCFs has serious consequences not only for residents but also for LTCFs and hospitals. Experience with control strategies for antimicrobial-resistant pathogens in LTCFs is limited; however, strategies used in hospitals often are inap-

plicable. Six recommendations for controlling antimicrobial resistance in LTCFs are offered, and four priorities for future research are identified.

Straut M. et al. *Antibiotics and bacterial resistance. A few elements of genetic basis for this relationship.* Roum Arch Microbiol Immunol. 1995; 54(4) : 241-54.p Abstract: In the preantibiotic era, many people died of bacterial infections caused by such pathogens as Staphylococcus aureus and Streptococcus pyogenes, Streptococcus pneumoniae and Mycobacterium tuberculosis. Antibiotics have reduced the mortality from infectious diseases but not the prevalence of these diseases. It was not long after the clinical introduction of the first antibiotics in the 1950s that the first reports of bacterial resistance began to appear. Use, and often abuse or misuse, of antimicrobial agents has encouraged the evolution of bacteria toward resistance, resulting often in therapeutic failure. In the beginning, new antibiotics have always appeared in plenty of time to provide new cures for diseases caused by resistant bacterial pathogens. Also, some clinically important groups of bacteria showed no signs of major increases in resistance. For example, S. pneumoniae strains remained susceptible to penicillin long after other bacteria had become resistant to it. Recent developments of bacteria resistance to antibiotics are indeed disquieting.

Stray-Pedersen B. *Is screening for genital infections in pregnancy necessary?* Acta Obstet Gynecol Scand Suppl. 1997; 164 : 116-20.p Abstract: In recent decades, cervical screening for gonorrhea has been an integral part of antenatal care. Today, in most countries in the "western world", other microorganisms commonly found in the vagina are important causes of premature labor and are associated with perinatal and puerperal infections. These include Chlamydia trachomatis, Group B streptococci, herpes simplex virus, genital mycoplasmas and bacterial vaginosis. This paper discusses current strategies to prevent complications of these infections in pregnancy and at birth.

Stray-Pedersen B. et al. *Vaginal disinfection with chlorhexidine during childbirth.* Int J Antimicrob Agents. 1999; 12(3) : 245-51.p Abstract: The purpose of this study was to determine whether chlorhexidine vaginal douching, applied by a squeeze bottle intra partum, reduced mother-to-child transmission of vaginal microorganisms including Streptococcus agalactiae (streptococcus serogroup B = GBS) and hence infectious morbidity in both mother and child. A prospective controlled study was conducted on pairs of mothers and their offspring. During the first 4 months (reference phase), the vaginal flora of women in labour was recorded and the newborns monitored. During the next 5 months (intervention phase), a trial of randomized, blinded placebo controlled douching with either 0.2% chlorhexidine or sterile saline was performed on 1130 women in vaginal labour. During childbirth, bacteria were isolated from 78% of the women. Vertical transmission of microbes occurred in 43% of the reference deliveries. In the double blind study, vaginal douching with chlorhexidine significantly reduced the vertical transmission rate from 35% (saline) to 18% (chlorhexidine), ($P < 0.000\ 1$, 95% confidence interval 0.12-0.22). The lower rate of bacteria isolated from the latter group was accompanied by a significantly reduced early infectious morbidity in the neonates ($P < 0.05$, 95% confidence interval 0.00-0.06). This finding was particularly pronounced in Str. agalactiae infections ($P < 0.0\ 1$). In the early postpartum period, fever in the mothers was significantly lower in the patients offered vaginal disinfection, a reduction from 7.2% in those douched using saline compared with 3.3% in those disinfected using chlorhexidine ($P < 0.05$, 95% confidence interval 0.01-0.06). A parallel lower occurrence of urinary tract infections was also observed, 6.2% in the saline group as compared with 3.4% in the chlorhexidine group ($P < 0.01$, 95% confidence p interval 0.00-0.05). This prospective controlled trial demonstrated that vaginal douching with 0.2% chlorhexidine during labour can significantly reduce both maternal and early neonatal infectious morbidity. The squeeze bottle procedure was simple, quick, and well tolerated. The beneficial effect may be ascribed both to mechanical cleansing by liquid flow and to the disinfective action of chlorhexidine.

Strobaek S. et al. *[Puerperal fever. A survey of an epidemic using a case-controlled study].* Ugeskr Laeger. 1997; 159(26) : 4117-22.p Abstract: Puerperal fever caused by group A streptococci (GAS) is a most serious infection deriving from the birth canal after childbirth or caesarian section and is manifest by fever and/or local signs of infections. Secundary infections in the umbilicus or skin can occur in the newborn child. As approximately 5% of the Danish population are carriers of GAS in nose, throat, rectum and/or vagina the risk of infection is present especially in childbirth. GAS epidemics in the community result in increased risk of hospital-acquired GAS infections. In the literature it is recommended to take action and implement preventive strategies when two simultaneous cases occur in one department. We describe the course of seven GAS infections in six patients (two children) in the same obstetric ward over a seven-week period, the elucidation by case-control analysis and the implementation of preventive measures. The importance of good hygienic practices is highlighted.

Struwig M.C. et al. *In vitro activities of 15 antimicrobial agents against clinical isolates of South African enterococci.* Antimicrob Agents Chemother. 1998; 42(10) : 2752-5.p Abstract: The activities of a panel of currently available antibiotics and the investigational agents LY 333328, linezolid, CL 331,002, CL 329,998, moxifloxacin (BAY 12-8039), trovafloxacin, and quinupristin-dalfopristin against 274 clinical isolates of enterococci were determined. No vancomycin resistance or beta-lactamase production was observed. Except for 12 isolates (all non-Enterococcus faecalis) showing reduced susceptibility to quinupristin-dalfopristin (MIC, >/=4 microg/ml), the new agents exhibited promising in vitro antienterococcal activity.

Sturm A.W. et al. *Over-the-counter availability of antimicrobial agents, self-medication and patterns of resistance in Karachi, Pakistan.* J Antimicrob Chemother. 1997; 39(4) : 543-7.p Abstract: To determine whether the free availability of antimicrobial agents leads to misuse through self-medication, a house-to-house semi-structured interview was held in three different socio-economic areas of Karachi, Pakistan. Of the 2348 households visited, 1342 (57%) participated; this included 9209 individuals. Three hundred and twenty-two (3.5%) had used one or more antimicrobial in the previous 4 weeks, equivalent to 43 agents per 1000 persons per month. The most frequently used agents were amoxycillin (16.7%), co-trimoxazole (15.7%), erythromycin (10.9%), ampicillin/cloxacillin (Ampiclox, 9.1%) and metronidazole (4.5%). Of these, 91.4% were prescribed by a physician, 2.3% were advised by a chemist and 6.3% were used as self-medication. Self-medication increased with socio-economic status. High levels of resistance were found to ampicillin, co-trimoxazole, chloramphenicol and erythromycin. If these high resistance levels are related to the high frequency of antimicrobial use, over-the-counter availability cannot be held responsible. Education of the medical profession seems to be the single most important tool to control misuse of antimicrobial agents. Innovative approaches for continuous medical education are urgently needed.

Styrt B.A. et al. *Prior antimicrobials and staphylococcal bacteremia in HIV-infected patients.* AIDS. 1997; 11(10) : 1243-8.p Abstract: OBJECTIVE: Many drugs used for prophylaxis against opportunistic infections in AIDS also have activity against common bacteria. This study was performed to delineate relationships between prior use of antimicrobials and Staphylococcus aureus bacteremia. DESIGN: To compare prior exposure to selected antimicrobial drugs in patients who had S. aureus bacteremia and in controls who did not, a nested case-control study was conducted within a cohort of HIV-infected persons followed in an outpatient clinic. METHODS: Using a computerized database based on HIV clinic records, 48 cases with S. aureus bacteremia were compared against 188 controls selected from patients with CD4 cell counts < 200 x 10(6)/l. Information on

demographic risk factors and antimicrobial drug use was analysed using conditional logistic regression. RESULTS: Injecting drug use was strongly associated with S. aureus bacteremia. Rifabutin use was associated with decreased risk of S. aureus bacteremia [conditional relative risk (RR) 0.308, 95% confidence interval (CI) 0.096-0.991] in univariate analysis, near statistical significance in multivariate analysis (RR 0.314, 95% CI 0.096-1.023). The bacteremias were not significantly associated with use of trimethoprim-sulfamethoxazole, quinolones, newer macrolides (azithromycin and clarithromycin), clindamycin or dapsone. CONCLUSIONS: Rifabutin may be associated with diminished risk of S. aureus bacteremia incidental to use for other purposes in HIV infection. Further study is needed to assess effects on microbial resistance.

Su J.Y. et al. *In Vitro antimicrobial susceptibilities of Streptococcus pneumoniae isolated from two teaching hospitals in Taiwan, 1989-1995.* Chung Hua Min Kuo Wei Sheng Wu Chi Mien I Hsueh Tsa Chih. 1995; 28(3) : 193-202.p Abstract: The susceptibility of 46 pneumococcal isolates collected during October 1989 to May 1995 from National Taiwan University Hospital and Taipei Municipal Yang Ming Hospital was studied. Among these isolates, the resistant rate of penicillin G was 21.7%; the penicillin G-resistant strains were more frequently resistant than the penicillin-sensitive strains to other beta-lactam antimicrobial drugs. The minimum bactericidal concentrations (MBCs) of penicillin G for all isolates were equal to, or one dilution higher than, minimum inhibitory concentrations (MICs). Three strains were false positive for penicillin resistance among isolates of Streptococcus pneumoniae screened with oxacillin. On the other hand, resistance to penicillin G was often independent of resistance to erythromycin. Vancomycin was the most active agent tested.

Suarez M.E. et al. *[Antimicrobial resistance of Shigella spp. in Cordoba, Argentina, during the period 1990-1997].* Rev Panam Salud Publica. 2000; 7(2) : 113-7.p Abstract: This study analyzed the evolution of antimicrobial resistance in 771 isolates of Shigella spp. obtained from a total of 9,195 feces cultures done between 1990 and 1997 in a children's hospital in Cordoba, Argentina. S. flexneri, which was responsible for 73% of the Shigella infections, was the species with the greatest resistance. The frequency of S. flexneri resistance to the three antibiotics most used (ampicillin, trimethoprim-sulfamethoxazole, and chloramphenicol) increased from 10% in 1990 to 58% in 1997 ($P < 0.001$). Considering each of the drugs individually, the resistance to ampicillin increased from 60% to 100% ($P < 0.001$), the resistance to chloramphenicol from 13% to 71% ($P < 0.001$), and the resistance to trimethoprim-sulfamethoxazole from 79% to 84% ($P = 0.22$). For S. sonnei, the increase in resistance to ampicillin (from 36% in 1990 to 54% in 1997) was not statistically significant ($P = 0.20$), nor was the reduction in resistance to trimethoprim-sulfamethoxazole, which went from 82% in 1990 to 55% in 1997 ($P = 0.08$). Only two S. sonnei isolates were found that were resistant to chloramphenicol, one in 1995 and another in 1997; two S. sonnei isolates were found with resistance to all three antibiotics. We consider it essential to carry out susceptibility tests of each Shigella clinical isolate, to detect changes in the resistance profile and thus modify empiric treatment.

Suarez-Penaranda J.M. et al. *Unexpected sudden death from coronary sinus thrombosis. An unusual complication of central venous catheterization.* J Forensic Sci. 2000; 45(4) : 920-2.p Abstract: Coronary sinus thrombosis is an unusual but potentially serious complication of the use of central venous devices. We report a fatal case of coronary sinus thrombosis in relation to a malpositioned central venous catheter. The death occurred very soon following the beginning of symptoms and the cause could not be suspected. Direct trauma of the catheter on the coronary sinus endothelium seems the most probable cause of the thrombosis.

Sugita R. et al. *[A clinicobacteriologic study on clavulanic acid/amoxicillin in pediatric acute otitis media].* Jpn J Antibiot. 1999; 52(10) : 595-612.p Abstract: We carried out clinical and bacteriological studies on clavulanic acid/amoxicillin and amoxicillin in pediatric acute otitis media at 14 general practice settings. The results are summarized as follows. 1. The major isolated organisms from content of middle ear effusion were Streptococcus pneumoniae 31.8%, Haemophilus influenzae 35.8% and Moraxella subgenus Branhamella catarrhalis 1.5%. Similar results were observed for the major isolates organisms from content of nasopharynx Streptococcus pneumoniae 31.1%, Haemophilus influenzae 33.9% and Moraxella subgenus Branhamella catarrhalis 19.2%. 2. 42.2% of S. pneumoniae isolated from middle ear effusion were drug resistant S. pneumoniae (PISP, PRSP) and they were increasing year by year. 3. 46.7% of S. pneumoniae isolated from nasopharyngeal swab were drug resistant S. pneumoniae (PISP, PRSP) and they were increasing year by year. The incidence of drug resistant S. pneumoniae isolated from all cases and organisms were 26.3% and 14.5%, respectively. 4. On MIC90, antimicrobial activity of CVA/AMPC against Streptococcus pneumoniae, Haemophilus influenzae and Moraxella subgenus Branhamella catarrhalis was superior to SBTPC. 5. In the evaluation of clinical efficacy, bacteriological efficacy and utility, CVA/AMPC-treated group was significantly superior to AMPC-treated group. 6. Adverse reactions were observed in 22% of CVA/AMPC-treated group, involving diarrhea and loose stool.

Sugita R. et al. *[A clinicobacteriologic study on clavulanic acid/amoxicillin in pediatric sinusitis].* Jpn J Antibiot. 1999; 52(10) : 613-27.p Abstract: We carried out clinical and bacteriological studies on clavulanic acid/amoxicillin and amoxicillin in pediatric sinusitis at 11 general practice settings. The results are summarized as follows. 1. The major isolated organisms from content of middle meatus were Streptococcus pneumoniae 32.2%, Haemophilus influenzae 32.0% and Moraxella subgenus Branhamella catarrhalis 25.1%. Similar results were observed for the major isolates from nasopharynx. 2. 62.1% of S. pneumoniae isolated were drug resistant S. pneumoniae (PISP, PRSP) and they were increasing year by year. 3. Drug resistant S. pneumoniae was isolated from 38.6% of all cases. 4. Regarding MIC90, CVA/AMPC showed superior antimicrobial activity against Streptococcus pneumoniae, Haemophilus influenzae and Moraxella subgenus Branhamella catarrhalis. 5. The clinical efficacy, bacteriological efficacy and utility of CVA/AMPC-treated group were 78%, 58% and 72.8%, respectively, and they were significantly superior to AMPC-treated group. 6. Adverse reactions were observed in 11.2% of CVA/AMPC group, involving diarrhea and stool loose and there was no statistical deference from those of AMPC group.

Suh H.K. et al. *A molecular epidemiologic study of methicillin-resistant Staphylococcus aureus infection in patients undergoing middle ear surgery.* Eur Arch Otorhinolaryngol. 1998; 255(7) : 347-51.p Abstract: The incidence of methicillin-resistant Staphylococcus aureus (MRSA) infections after middle ear surgery has recently increased at our hospital. Most of these infections were thought to be hospital-acquired when medical personnel in contact with an MRSA-infected patient may have inadvertently transmitted the pathogen to other patients. To prevent further transmission it is essential that such sources of MRSA infection and transmission routes be selected out and eradicated. Therefore, it is necessary to determine whether the strains of MRSA isolated from infected patients are identical to those obtained from medical personnel in order to prove a reciprocal transmission of organisms between medical personnel and patients. Surveillance bacterial cultures from the anterior nares and hands of medical personnel working in the Department of Otolaryngology, Korea University Guro Hospital, were performed at two different time points: 6 December 1994 and 17 June 1996. Ribotyping with Southern blot technique was used to compare 12 MRSA strains from medical carriers with 60 strains identified from the otorrhea of MRSA-infected patients undergoing middle ear surgery. As results, six different MRSA strains were identified (types I, II, III, IV, V and VI) from ribotyping with EcoR1. One distinct subtype, type I strain, was the most frequently identified strain in both medical carriers and

patients. Results also showed that 6 MRSA isolates from 10 medical carriers and 20 from 30 patients contained type I ribotype at first culture. Two medical carriers' isolates and 13 isolates from 30 patients shared the same type I strain at the second surveillance culture. In all, 41 out of 72 MRSA strains (56.9%) shared an identical ribotype pattern. Postoperative MRSA infection rates after treatment of medical carriers and the application of rigorous preventive procedures decreased from 11.9 to 5.7% after first culture and 9.0 to 7.7% following second cultures. These findings confirm that MRSA transmission can occur between medical personnel and patients and that effective preventive measures can reduce the postoperative infection rate.

Sulek C.A. et al. *A randomized study of left versus right internal jugular vein cannulation in adults.* J Clin Anesth. 2000; 12(2) : 142-5.p Abstract: STUDY OBJECTIVE: To compare the success rate and incidence of complications of right internal jugular vein (RIJV) versus left internal jugular vein (LIJV) cannulation using external landmarks or surface ultrasound guidance. DESIGN: Prospective randomized study. SETTING: Operating room of a university-affiliated hospital. PATIENTS: 120 adult patients scheduled for elective abdominal, vascular, or cardiothoracic procedures with general anesthesia and mechanical ventilation in whom central venous cannulation was clinically indicated. INTERVENTIONS: Patients were randomized to four groups for RIJV cannulation using the landmark approach (Group 1) or surface ultrasound (Group 2) versus LIJV cannulation with the landmark approach (Group 3) or ultrasound (Group 4). MEASUREMENTS AND MAIN RESULTS: The data collected included time from first puncture to guidewire insertion, number of attempts, and associated complications. If conversion to the ultrasound technique was required, the number of crossover patients and reasons for failure were recorded. Cannulation of the LIJV was more time consuming; it required more attempts; and it was associated with a greater number of complications when compared to the right side ($p < 0.05$). CONCLUSIONS: Left IJV cannulation is more time consuming than RIJV cannulation and is associated with a higher incidence of complications. The use of ultrasound improves success rate and decreases the number of complications during IJV cannulation.

Suller M.T. et al. *Antibiotic and biocide resistance in methicillin-resistant Staphylococcus aureus and vancomycin-resistant enterococcus.* J Hosp Infect. 1999; 43(4) : 281-91.p Abstract: Concern has been growing regarding the potential of antibiotic and disinfectant co-resistance in clinically important bacteria. In this study, the susceptibilities of methicillin-resistant Staphylococcus aureus (MRSA) and methicillin-sensitive Staphylococcus aureus (MSSA) to chlorhexidine (CHX), the quaternary ammonium compounds cetylpyridinium chloride (CPC) and benzalkonium chloride (BC), triclosan, dibromopropamidine isethionate (DBPI) and triclocarban were compared. MRSA exhibited low-level resistance to CHX and the QACs, with MICs of 1.5 to 3-fold (CHX), and 2 to 4-fold (QACs) higher than MSSA. However, the MIC values for MRSA ranged between 0.025 (the MIC of MSSA) and 1 microg/mL with triclosan, and between <5 (the MIC of MSSA) and 75 microg/mL with DPBI. Nevertheless, these strains remain relatively sensitive to most of these antimicrobial agents. The bactericidal efficacy of CHX, CPC and DBPI (with the exception of one strain) correlated with their MIC value. This was not observed using triclosan; MRSA and MSSA strains were equally susceptible to its killing effect, regardless of MIC. The permeabilizing agent, ethylenediamine tetraacetic acid (EDTA) was unable to potentiate the antibacterial activities of the biocides against any of the strains tested. Attempts to select for staphylococcal strains with increased resistance to triclosan, CPC or CHX, using disc diffusion, step-wise broth, or repeated exposure/recovery technique, were only partially successful, and resistance was found to be unstable. The susceptibilities of vancomycin-resistant enterococcus (VRE) and vancomycin-sensitive enterococcus (VSE) to the biocides were also compared and found to be similar both in terms of MIC testing and time-kill studies.

Suman O.d. et al. *Esterilidad de las batas usadas para la manipulación de pacientes criticamente enfermos.* Rev. Hosp. Niño (Panam). 1995; 14(1/2) : 22-5.p Abstract: Con el fin de buscar medidas de prevención y control de las infecciones nosocomiales en el Hospital del Niño se procedió a evaluar la esterilidad de las batas empleadas para la atención de los pacientes críticamente enfermos o inmunocomprometidos. Se cultivaron, para ello, batas hospitalarias y ropa del personal de diferentes salas del Hospital con muestras de Acinetobacter spp. Otras bacterias encontradas, más frecuentemente en el turno de la noche, fueron los bacilos Gram negativos, tales como, Pseudomonas spp., Enterobacter spp. y Klebsiella spp. La resistencia antimicrobiana de los gérmenes aislados aumentó considerablemente en las batas cultivadas en el turno de la noche. Se concluye que las batas usadas por el personal si no son descartadas inmediatamente y son guardadas para un uso posterior pueden convertirse en un peligro tanto para el paciente como para el personal, ya que representan un reservorio nosocomial de microorganismos multirresistentes (AU.).

Sumita Y. et al. *Meropenem resistance in Pseudomonas aeruginosa.* Chemotherapy. 1996; 42(1) : 47-56.p Abstract: Two genetically distinct classes of meropenem-low-susceptibility Pseudomonas aeruginosa PAO2152 mutants, which arose spontaneously, were isolated. Two meropenem resistance genes, mpmA and mpmB, were mapped near ilvB/C and proC, respectively, on the P. aeruginosa PAO chromosome. The mpmA was thought to be identical to oprD2 because of the cross-resistance to carbapenems and the association with the loss of the outer membrane protein D2 (OprD2). The mpmB mutation conferred a 4-fold increase in resistance to meropenem, and cross-resistance to various types of antimicrobial agents, e.g. carbenicillin, norfloxacin and chloramphenicol. However, the mpmB mutant was susceptible to imipenem. This mutant still possessed OprD2 and showed increased expression of a 48-kD outer membrane protein, although its profiles of beta-lactamase activity and affinities of penicillin-binding proteins for beta-lactams were indistinguishable from those of the parent strain. The resistance gene mpmB was considered to be an allele of nalB (or cfxB or oprK) from the results of the transductional analysis. The mutation frequency of mpmA:mpmB was in the ratio of 4:1. The same results were obtained in another clinically isolated P. aeruginosa strain. Meropenem resistance caused by both mpmA and mpmB mutations seemed to be due to the reduction in permeability of antibiotics through the outer membrane. These findings suggest a new pathway for the translocation of meropenem other than that mediated by OprD2 across the outer membrane. Thus, meropenem showed about 4- to 8-fold higher activity than imipenem against OprD2-deficient P. aeruginosa.

Sunakawa K. et al. *[Clinical evaluation of faropenem against infections in pediatric fields].* Jpn J Antibiot. 1997; 50(9) : 739-55.p Abstract: The recent increases in the prevalence of penicillin-resistant Streptococcus pneumoniae becomes a point at issue clinically. We carried out a clinical study in 40 cases in the pediatrics department, as faropenem (FRPM) was proved to have an excellent antimicrobial activity against penicillin-resistant Streptococcus pneumoniae. The study was planned to investigate in detail the movement of stools that had been a problem in a clinical development studies out before. In this study, an observation of the daily movement of stools was one of the principal evaluation items, hence the patients were divided into two groups. One group (S-group) were administered FRPM only, the other group (E-group) were administered FRPM in combination with a medicine for intestinal disorders (Enteronon-R). An observed frequencies of any loose bowel movements were 94.7% in S-group, and 63.2% in E-group, hence the study suggested that the combination drug was effective. The patients observed higher frequencies of development of the movement of stools, all of them were recovered from in the course of administration or within 4 days after administration, however whether or not being treated symptomatic therapy. Clinical efficacy rates of FRPM on mainly

respiratory infections were 94.6%. In this study, 4 strains (patients) of penicillin-resistant Streptococcus pneumoniae were isolated. Against penicillin-resistant Streptococcus pneumoniae, FRPM demonstrated more potent antibacterial activity than the oral penicillins and cephems tested here except cefditoren. Clinical efficacies was deemed effective in all of the 4 cases, and bacteriologically, 3 organisms were eradicated. As for side effects including diarrhea and loose stool, no serious side effects were observed. Based on the above results, FRPM is effective against most infections in the pediatric field which Streptococcus pneumoniae are isolated at high frequencies highly, and is considered to cases in be useful an attention will have to be paid to stool movement, however.

Sung J.J. *Where are We with current therapy?* Helicobacter. 2000; 5 Suppl 1 : S17-21; discussion S27-31.p Abstract: Despite intensive research and widely publicized recommendations from consensus meetings in different continents, the public and primary care physicians are relatively slow in picking up the impact of Helicobacter pylori infection and identifying optimal therapies. The treatment of H. pylori infection has evolved from bismuth-containing regimens, 2-week proton pump inhibitor (PPI)-dual therapies, and now, the widely accepted PPI/ranitidine bismuth citrate (RBC) single week triple therapies. There is a wealth of evidence showing that these regimens are highly efficacious and well tolerated by patients. The MACH-2 studies have confirmed that the addition of a PPI to two antimicrobials has significantly improved the cure rate of H. pylori infection and reduced the impact of antimicrobial resistance. Attempts to use shorter regimens ranging from 1 to 3 days should be resisted because of their unacceptably low therapeutic efficacy. In the United States, there are some indications that 10-14 days of treatment may be required. While the first-line therapies for H. pylori infection is well established, we are still struggling with the choice of optimal regimen in retreatment after the first attempt fails. Quadruple therapy combining PPI with bismuth, metronidazole and tetracycline has achieved a respectable success of around 85%. Switching between metronidazole and clarithromycin seems to be a sensible strategy as these two are the most effective anti-Helicobacter agents. Changing between PPI and RBC in the triple therapy would not make much difference without replacing some of the antimicrobials. Rifabutin-containing regimens and high-dose PPI-amoxicillin dual therapy deserve more studies with large-scale studies. Data on anti-Helicobacter therapy for children are few. Most studies based on bismuth derivatives in combination with amoxicillin or tinidazole and were limited by the small number of cases. Recent studies showed 1-week bismuth-based triple therapy and 2-week PPI-based triple therapy are highly efficacious. Reinfection in children > 5 years of age after successful cure is rare. It is worthwhile to refine the optimal therapy for children as the treatment of this group would, theoretically, prevent the development gastric cancer in the long term.

Suojanen J.N. et al. *Thrombus on indwelling central venous catheters: the histopathology of "Fibrin sheaths"*. Cardiovasc Intervent Radiol. 2000; 23(3) : 194-7.p Abstract: PURPOSE: Central venous catheters (CVC) may fail for many reasons, though "fibrin sheaths" blocking catheter ports are usually implicated. We examined the sheaths removed from dialysis catheters to determine their histopathology. METHODS: Ten catheter strippings were performed and the removed material was studied grossly and microscopically. RESULTS: The histologic specimens showed thrombus both with and without a proteinaceous sheath. CONCLUSION: Dialysis catheters fail because of thrombus formation. This can occur in either the absence or presence of a protein coating on the catheter, the so-called "fibrin sheath.".

Sutton D.V. et al. *Resistant bacteria in middle ear fluid at the time of tympanotomy tube surgery.* Ann Otol Rhinol Laryngol. 2000; 109(1) : 24-9.p Abstract: This study was performed to determine the prevalence of resistant Streptococcus pneumoniae, Haemophilus influenzae, and Moraxella catarrhalis isolated from middle ear fluid of children undergoing placement of ventilation tubes. The extent of resistance to commonly prescribed antibiotics and the risk factors associated with this resistance were also examined. Children who had fluid present in their middle ears at the time of ventilation tube placement from May 1996 to May 1997 were included in the study. Middle ear fluid was plated onto culture media in the operating room, and antimicrobial resistance of cultured organisms was ascertained. Risk factors for this resistance were determined from the medical history and analyzed. Cultures of 244 patients (355 ears) were positive for organisms in 29.6%. Penicillin resistance was found in 38.2% of S pneumoniae cultures. Beta-lactamase production was found in 65.1% and 100% of H influenzae and M catarrhalis specimens, respectively. Risk factor analysis revealed young age, day care attendance, and number of antibiotic courses to most reliably predict the presence of resistant microorganisms.

Suvorov A.N. et al. *[Genetic analysis of pathogenic streptococci groups A and B].* Vestn Ross Akad Med Nauk. 1998; (12) : 49-54.p Abstract: The study deals with the genetic mapping of chromosomal DNA of groups A (AS) and B (BS) pathogenetic Streptococci. Its stages are presented and considered. The maps of these microorganisms are compared. A collection of epidemic AS and BS was analyzed by employing pulsed field gel electrophoresis. AS and BS were found to show heterogeneity of DNA sequences and the common pattern of gene location on the chromosomes.

Suvorov A.N. et al. *Replication origin of Streptococcus pyogenes, organization and cloning in heterologous systems.* FEMS Microbiol Lett. 2000; 189(2) : 293-7.p Abstract: The origin of DNA replication (oriC) of Streptococcus pyogenes, group A streptococci (GAS), has been cloned in Escherichia coli and reintroduced by transformation into other GAS strains. Transformation frequencies into GAS strains with oriC-carrying plasmids occurred with unusually high frequencies. However, the oriC-containing plasmids in the new recipients were found to be unstable and had a tendency to integrate into the chromosome, even when a recA GAS strain was used as a recipient. The GAS oriC was able to direct the replication of autonomous plasmids in group B streptococcal recipients. The chromosomal organization of the oriC region of GAS relative to other bacterial species appears to be similar to oriC of Bacillus subtilis and other Gram-positive microorganisms.

Suyama Y. et al. *Eliminating effects of an air purifier on infectants during dental procedure.* Bull Tokyo Dent Coll. 1995; 36(1) : 27-31.p Abstract: Blood and drill dust from dental plaque microorganisms, teeth, and filling materials can cause environmental pollution in the dental clinic. Currently, as a preventive measure against air pollution from a patient's mouth during dental treatment, dust-collecting aspirators such as an extra-oral vacuum aspirator (EOVA) are coming into general use. We tested the eliminating effects by the EOVA with the plaque solution aerosol and the aerosol from drilling a tooth by examining the distribution of floating aerosol in the air turbine's tank when a plaque solution was sprayed and when a human tooth was drilled with a plaque solution. We concluded that infectious aerosol increases in diameter with the drilling of human teeth to the size of about 0.5-5.0 micrometers, which is microbiologically and hygienically hazardous and also can be inhaled without much difficulty.

Suzuki K. et al. *Antimicrobial ear drop medication therapy.* Acta Otolaryngol Suppl. 1996; 525 : 68-72.p Abstract: Ear drop medication, which delivers a concentrated drug directly to the lesion, is a useful therapeutic approach in that it provides enhanced efficacy at the affected site while avoiding the side effects accompanying systemic administration of the drug. In the present study we evaluated the effectiveness of three recently developed antibacterial agents with no proven ototoxicity: cefmenoxime (CMX), fosfomycin (FOM), and ofloxacin (OFLX). The bacterial eradication rate, the bacterial persistence rate,

and the fungal infection rate were 91.4%, 2.9% and 5.7% for CMX, 71.2%, 20.9% and 7.0% for FOM, and 88.4%, 4.7% and 7.0% for OFLX, respectively. For lomefloxacin (LFLX) (with one week of treatment), the eradication rate and the persistence rate were 80.2% and 19.8%, respectively. It is advisable to limit the duration of treatment with the same otic drug; using the drug for more than 4 weeks at the most should be avoided.

Suzuki Y. et al. *[Antimicrobial activity of cefodizime against clinical isolates].* Jpn J Antibiot. 1996; 49(10) : 947-65.p Abstract: In order to evaluate antimicrobial activity of cefodizime (CDZM), minimum inhibitory concentrations (MICs) of CDZM and control drugs were determined against clinical isolates collected from nation-wide medical institutions and in our laboratory from September to December of 1992 and from September to December of 1995. The results are summarized as follows: 1. Bacterial species with no or few strains resistant to CDZM included Streptococcus pyogenes, Haemophilus influenzae, Citrobacter koseri, Proteus mirabilis and Neisseria gonorrhoeae. The range of MIC values of CDZM against Klebsiella pneumoniae was spread. Other strains, Streptococcus pneumoniae, Moraxella subgenus Branhamella catarrhalis, Escherichia coli, Citrobacter freundii, Enterobacter spp., Serratia marcescens, Proteus vulgaris, Morganella morganii, Providencia spp., Peptostreptococcus spp. and Bacteroides fragilis group were resistant to cephems including CDZM. 2. The MIC90's of CDZM were 0.05 approximately 3.13 micrograms/ml against Streptococcus spp., H. influenzae, M. (B.) catarrhalis, E. coli, Klebsiella spp., P. mirabilis, N. gonorrhoeae and Peptostreptococcus spp. obtained in 1995 that were frequently found in daily treatment of infections. It appears that the effectiveness of CDZM was still relatively high against community-acquired infections. 3. Among H. influenzae isolates included imipenem (IPM)-resistant and norfloxacin (NFLX)-resistant strains. The MIC-range of CDZM against strains collected in 1995 including IPM-resistant and NFLX-resistant strains was < or = 0.025 approximately 0.1 microgram/ml, and MIC90 against these strains was 0.05 microgram/ml. CDZM showed strong antimicrobial activities against H. influenzae strains resistant to carbapenems and new-quinolones.

Suzuki Y. et al. *[Antimicrobial activities of clarithromycin against recent obtained clinical isolates].* Jpn J Antibiot. 1997; 50(9) : 776-93.p Abstract: In order to evaluate antimicrobial activities of clarithromycin (CAM), minimum inhibitory concentrations (MICs) of CAM and control drugs were determined against clinical isolates that were obtained from outpatients in 1994 and 1996. The results are summarized as follows; 1. It was not showed that CAM-resistant strains were increasing among Staphylococcus spp., beta-streptococci, Moraxella subgenus Branhamella catarrhalis, Haemophilus influenzae, Bordetella pertussis, Campylobacter jejuni subsp. jejuni, Chlamydia trachomatis and Mycoplasma pneumoniae. It appeared that resistances to CAM and macrolides (MLs) were increasing among Streptococcus pneumoniae and Peptostreptococcus spp. 2. The drug susceptibility patterns to MLs were similar and detection frequencies of induced resistant strains that were resistant to only 14-membered ring MLs including CAM and constitutive resistant strains that were resistant to 14 and 16-membered ring MLs were high among Streptococcus pneumoniae and Peptostreptococcus spp. It appears that MLs-resistance systems are linked to each other, and that this was a cause of increasing MLs-resistance among these bacterial species. 3. Notwithstanding of antibiotic resistance problems, CAM is still useful since it maintains strong antimicrobial activities against M. (B.) catarrhalis, B. pertussis, C. jejuni subsp. jejuni, C. trachomatis and M. pneumoniae, and it controls arginate producing abilities of mucoide strains of Pseudomonas aeruginosa.

Suzuki Y. et al. *[Antimicrobial activities of cefepime against clinically isolated strains].* Jpn J Antibiot. 1995; 48(12) : 1906-19.p Abstract: In order to evaluate antimicrobial activity of cefepime (CFPM), minimum inhibitory concentrations (MICs) of CFPM and other drugs were determined against clinical isolates that were obtained in 1994. 1. CFPM showed a wide antibacterial spectrum against Staphylococcus spp. and glucose non-fermentative Gram-negative rods ((G)NF-GNR). Antimicrobial activities of CFPM against Staphylococcus spp. were stronger than those of ceftazidime (CAZ) and somewhat stronger than those of cefotaxime (CTX), and antimicrobial activity of CFPM against Pseudomonas aeruginosa was same as that of CAZ. 2. Antimicrobial activities of CFPM against almost all of Enterobacteriaceae were stronger than those of CAZ and CTX. And CFPM showed strong antimicrobial activities against CAZ-resistant Escherichia coli, Citrobacter freundii and Enterobacter spp. 3. Antimicrobial activities of CFPM were weaker than those of CAZ against some of strains of Klebsiella oxytoca, beta-lactamase high producing strains of Moraxella subgenus Branhamella catarrhalis and than those of CTX against beta-lactamase high producing strains of Prevotella spp. 4. The feature of new cephems was demonstrated in that CFPM had wider antibacterial spectrum than cephems of previous genenations against Staphylococcus spp. and (G)NF-GNR and CFPM showed strong antimicrobial activities against almost all of oxacephem-resistant Enterobacteriaceae.

Suzuki Y. et al. *[Antimicrobial activities of ceftriaxone against fresh, clinically isolated strains].* Jpn J Antibiot. 1996; 49(1) : 83-94.p Abstract: In order to evaluate antimicrobial activity of ceftriaxone (CTRX), minimum inhibitory concentrations (MICs) of CTRX and control drugs were determined against clinically isolated strains including those from purulent meningitis and liver and biliary tract infections in 1995. The results are summarized as follows; 1. MIC90 of CTRX was 0.05 micrograms/ml against benzylpenicillin (PCG)-insensitive Streptococcus pneumoniae or PCG-resistant S. pneumoniae and it was < or = 0.025 micrograms/ml against beta-lactamase producing strains of Haemophilus influenzae. Antimicrobial activities of CTRX against these strains were stronger than control drugs. 2. MIC distribution of CTRX was in a lower concentration range than those of ceftazidime and flomoxef against extend broad-spectrum beta-lactamase (EBLA)-producing Escherichia coli and Klebsiella pneumoniae subsp. pneumoniae. 3. These results suggested that CTRX will be effective against community-acquired pneumonia, purulent meningitis and liver & biliary tract infections.

Suzuki Y. et al. *[Antimicrobial activities of meropenem against clinically isolated strains in 1997].* Jpn J Antibiot. 1999; 52(12) : 695-720.p Abstract: In order to evaluate antimicrobial activity of meropenem (MEPM), minimum inhibitory concentrations (MICs) of MEPM and control drugs were determined against clinical isolates in 1997. The results were as follows; 1. Antimicrobial activities of MEPM against Gram-positive bacteria were stronger than those of cephems (CEPs) and were approximately equal to those of imipenem (IPM) and panipenem (PAPM). 2. Carbapenems showed strong antimicrobial activities against Enterobacteriaceae, Glucose non-fermentative Gram-negative rods and Bacteroides fragilis group that were multiple drug resistant including the third generation CEPs. Antimicrobial activities of MEPM against these organisms were stronger than those of IPM and PAPM. By comparing antimicrobial activities of MEPM against Gram-negative bacteria in 1997 with those obtained in 1993, increase of resistance was not observed. 3. MIC-ranges of MEPM were low against the resistant strains of Pseudomonas aeruginosa to IPM and PAPM. It was considered that these resistant strains were not expressing oprD products (D2 porin protein), forming main outer membrane porin channels of carbapenems and basic amino acids.

Svec P. et al. *Occurrence of Enterococcus spp. in waters.* Folia Microbiol (Praha). 1999; 44(1) : 3-10.p Abstract: We studied 630 bacterial strains isolated from surface waters and determined as enterococci on the basis of their growth on Slanetz-Bartley agar in typical colonies. The strains were tested and characterized by several key conventional tests for basic differentiation of enterococci and by commercial test kits. We identified 135 strains of E. foecium (21%),

115 E. faecalis (18%), 30 E. mundtii (5%), 27 E. hirae (4%), 22 E. casseliflavus (3%), 21 E. gallinarum (3%), 17 E. durans-E. hirae complex (3%), 5 E. durans (1%), and 1 strain of E. avium. 150 strains were classified only as Enterococcus sp. (25%) and 107 strains (17%) isolated from Slanetz-Bartley agar were not enterococci. We found that the non-enterococcal group consisted of other Gram-positive cocci and Gram-positive and Gram-negative rods. Based on the identification we tried to find a relation between taxonomic position of isolated strains and their colony morphology on Slanetz-Bartley agar. Our of the total of 523 identified enterococci, 345 strains (66%) formed purple colonies, 136 red colonies (26%), 37 pink colonies (7%) and 5 cream colored colonies (1%). There was no correlation among the color, size or colony morphology and the taxonomic characterization of enterococcal strains.

Swanston W.H. et al. *Antibiotic susceptibility of Neisseria gonorrhoeae in Trinidad and Tobago.* West Indian Med J. 1997; 46(4) : 107-10.p Abstract: Treatment failures with standard doses of penicillin have been observed in the Sexually Transmitted Diseases (STD) clinics in Trinidad and Tobago. In the absence of an ongoing surveillance system, the antimicrobial susceptibility of 518 Neisseria gonorrhoeae strains was determined in order to guide treatment. 39 (7.6%) strains were resistant to penicillin, including 27 (5.2%) positive for beta-lactamase; that is penicillinase-producing Neisseria gonorrhoeae (PPNG). 51 (10%) strains were resistant to tetracycline, with 26 (5.0%) of these exhibiting high levels of resistance compatible with tetracycline resistant Neisseria gonorrhoeae (TRNG). Six strains showed evidence of having both PPNG and TRNG plasmids, and five strains showed chromosomally-mediated resistance to both penicillin and tetracycline. The overall resistance rate to penicillin and tetracycline was 17.7%. There was no resistance to spectinomycin, cefuroxime, ceftriaxone and norfloxacin. The resistance rates demonstrated in this study are sufficiently significant to preclude the use of penicillin and tetracycline in the STD clinics and to justify the use of newer antimicrobials. It is essential that resistance patterns be monitored by continued surveillance.

Sweet R.L. *Role of bacterial vaginosis in pelvic inflammatory disease.* Clin Infect Dis. 1995; 20 Suppl 2 : S271-5.p Abstract: Pelvic inflammatory disease (PID) is a frequent infection in sexually active young women and results in adverse sequelae, including tubal-factor infertility and ectopic pregnancy. In the 1970s investigations using culdocentesis demonstrated that anaerobic bacteria played an important role in the etiology of PID. This finding has subsequently been confirmed by studies utilizing laparoscopy and/or endometrial biopsy to obtain specimens directly from the upper genital tract (uterine cavity and fallopian tube) of patients with acute PID. Recently, several investigations have shown an association between bacterial vaginosis and the development of acute PID. The microorganisms associated with bacterial vaginosis include anaerobes such as Prevotella bivia, other Prevotella species, and Peptostreptococcus species. These studies that have demonstrated the presence of bacterial vaginosis-associated bacteria in addition to the sexually transmitted organisms Neisseria gonorrhoeae and Chlamydia trachomatis suggest that treatment of acute PID must be broad spectrum in nature and effective against anaerobic bacteria as well as N. gonorrhoeae and C. trachomatis.

Sweet S.P. et al. *Impaired secretory immunity in dystrophic epidermolysis bullosa.* Oral Microbiol Immunol. 1999; 14(5) : 316-20.p Abstract: Dystrophic epidermolysis bullosa is a congenital disorder characterized by blistering of the skin and oral mucosa. This study investigated the hypothesis that children with dystrophic epidermolysis bullosa have impaired oral secretory immunity. Immunoglobulin A (IgA), secretory IgA and IgG concentrations, and IgA and secretory IgA antibody levels to Candida albicans, Lactobacillus casei and Streptococcus mutans were measured in whole saliva from 22 children with dystrophic epidermolysis bullosa and 22 matched controls. Salivary total IgA and total IgG concentrations were significantly raised in dystrophic epidermolysis bullosa due to serum leakage from oral blistering, but the converse was seen with secretory IgA. This suggestion of a mucosal immune defect was supported by decreased secretory IgA antibody responses to all three microorganisms tested. This apparent defect in secretory immunity in dystrophic epidermolysis bullosa may be due to mucosal involvement and damage resulting in impaired antigen sampling in mucosal associated lymphoid tissue or to impaired transport of secretory IgA across the salivary gland mucosa.

Syrogiannopoulos G.A. et al. *Carriage of antibiotic-resistant Streptococcus pneumoniae in Greek infants and toddlers.* Eur J Clin Microbiol Infect Dis. 2000; 19(4) : 288-93.p Abstract: The prevalence, resistance patterns and serotypes of antibiotic-resistant Streptococcus pneumoniae strains recovered from Greek carriers under 24 months of age were studied. From February 1997 to April 1998, nasopharyngeal cultures were performed in 1,269 children (ages 2-23 months, median 11 months) living in various areas of central and southern Greece. Resistance (including both intermediate and resistant isolates) to one or more antimicrobial agents was found in 132 of the 421 (31%) Streptococcus pneumoniae isolates, as follows: penicillin, 9% intermediate, 7.6% resistant; cefotaxime, 5.2% intermediate, 0.5% resistant; erythromycin, 0.7% intermediate, 18.1% resistant; clindamycin, 0.2% intermediate, 12.4% resistant; tetracycline, 0.7% intermediate, 16.4% resistant; chloramphenicol, 12.4% resistant; and trimethoprim-sulfamethoxazole, 3.8% intermediate, 14.3% resistant. The MICs of penicillin for 66% of the penicillin-nonsusceptible pneumococci were 1-4 microg/ml. Multidrug resistance was found in 64% of penicillin-nonsusceptible and 37% of penicillin-susceptible strains. Sixty-two percent of the penicillin-susceptible, multidrug-resistant strains belonged to serotype 6B and were resistant to all five non-beta-lactam agents tested. This notable serotype 6B resistance pattern was described for the first time in a previous study performed from December 1995 to February 1996 in the city of Patras, southwestern Greece. Seventy-two percent of antibiotic-resistant isolates belonged to serotypes 6B, 9V, 14, 18C, 19F and 23F. These results document the spread of resistant pneumococcal strains in central and southern Greece, many of which are multidrug resistant.

Szabo E.A. et al. *Detection of Salmonella enteritidis by reverse transcription-polymerase chain reaction (PCR).* Int J Food Microbiol. 1999; 51(2-3) : 113-22.p Abstract: A reverse transcription-polymerase chain reaction (RT-PCR) method was developed for detecting mRNA from the sefA gene of Salmonella enteritidis. Detection of target mRNA was examined from cells grown in buffered peptone water at different temperatures (37, 25 and 15 degrees C) and pH (5.5, 7.2 and 8.5). The results revealed that the levels of transcription of the sefA gene differed depending upon the physiological state of the cells. This affected the sensitivity of the RT-PCR assay. When the assay was evaluated for the detection of S. enteritidis PT4 in artificially contaminated minced beef and whole egg samples, an enrichment step was used (buffered peptone water, pH 7.2, 37 degrees C, 16 h) to increase the sensitivity of the assay. In the presence of the normal background flora of each food type, it was possible to detect ten cells of S. enteritidis PT4 after a 16-h enrichment using the RT-PCR assay, with a total testing time of 28 h. Unlike the PCR test for the sefA gene that was tested in parallel, the RT-PCR assay did not detect nonviable (heat-inactivated) S. enteritidis PT4 cells. The results supported the usefulness of RT-PCR as a method for the detection of viable microorganisms.

Szewczyk E.M. et al. *Predominant staphylococci in the intensive care unit of a paediatric hospital.* J Hosp Infect. 2000; 45(2) : 145-54.p Abstract: Coagulase-negative staphylococci cause a significant number of infections, especially in immunocompromised patients, including premature neonates. Nosocomial strains present in the environment create a special risk. We studied staphylococci isolated from the intensive care unit of a paediatric teaching hospital over the period of six months in 1997. Biotyping and species identification were

performed; resistance to methicillin and other beta-lactam antibiotics and patterns of resistance to antimicrobial agents were determined.Staphylococcus cohnii was the predominant species of 147 isolates of staphylococci recovered from the ward environment. Strains were resistant to several antibiotics and 97% were resistant to methicillin. In isolates from infants (72) methicillin-resistant strains of Staphylococcus epidermidis were predominant. Susceptibility to beta-lactams (penicillin, amoxycillin, amoxycillin-clavulanic acid and cephalosporins: cephalothin, cefuroxime and cefotaxime) showed differences between the two species. Some S. cohnii were susceptible to penicillin and amoxycillin despite methicillin-resistance. S. epidermidis were relatively susceptible to amoxycillin-clavulanic acid and cephalosporins. All strains investigated were susceptible to vancomycin, but nearly 30% demonstrated high-level resistance to mupirocin. The search for strains of the same origin showed clones belonging to S. epidermidis, S. hominis and S. saprophyticus but not S. cohnii.A large number of multiresistant, phenotypically different S. cohnii strains surviving in the ward environment may provide a reservoir of antimicrobial resistance genes. Copyright 2000 The Hospital Infection Society.

Szymaniak L. *[An attempt to block histamine release from basophils granulocytes with antibodies obtained as a result of long-term immunization].* Ann Acad Med Stetin. 1998; 44 : 45-64.p Abstract: Pathogenetic mechanisms responsible for efficacy of specific immunotherapy still remain to be fully explained.This concerns both desensitization with classic allergens and very rarely used specific immunotherapy with bacteria. Microbes can play important role as hypersensitivity factor in some allergo-inflammatory processes. Bacterial products may act as basophil histamine liberators through immunological (IgE-mediated) and nonimmunological—particular lectin-sugar way. The aim of study was to verify if histamine release triggered by microbes could be modified (blocked) with specific antibacterial antibodies—taking into consideration both of mechanisms of basophil degranulation. The size of immediate (in healthy persons—Tab. 3, 4) and late as well as delayed (in asthmatic patients—Tab. 8) skin reactivity to examined microorganisms and the degree of basophil histamine release induced with these bacteria were compared. Human basophils were isolated from peripheral blood on Ficoll-Hypaque gradient, next challenged with whole, formalin-killed bacteria and with the same bacteria after incubation with specific and nonspecific sera. To differentiate between IgE-dependent and non-immunological mechanisms of histamine release, the IgE molecules were removed from the surface of the basophils by exposure to pH 3.6 (stripping). In each experiment histamine release induced by anti-IgE antibodies was used as control of stripping (Tab. 5, 9). Levels of histamine from the basophils (without and after stripping) incubated with non-coated and specific antibodies coated bacteria were compared. The results were expressed as a percentage of total histamine content in the sample. Histamine release was assayed spectrofluorometrically by using Shore method in Norn modification. The main investigations concerned the basophils from 12 healthy, nonatopic individuals, who had positive immediate skin reactions with at least 1 from 3 microbial strains: Staphylococcus aureus 9615 (unencapsulated), Staphylococcus aureus Smith (encapsulated) and Escherichia coli. Sera containing specific antibodies for these microorganisms were obtained from immunized rabbits. As negative control served sera collected from animals after immunization. Additionally the basophils of 6 asthmatic (intrinsic asthma) patients treated with autovaccines were examined. All patients demonstrated positive late and delayed skin reactions, 3 of them also immediate, to autologous Neisseria and Moraxella species cultured from upper respiratory tract. The bacteria were used as a component of autovaccine and as a basophils stimulating factor in histamine assay. Microbes were incubated with patients own sera before (unspecific serum) and after treatment (source of "specific" antibodies). CONCLUSIONS: 1. Bacteria induced basophil histamine release through two ways: immunological (IgE-mediated) and non-immunological (sugar-lectin interactions). 2. Non-immunological interactions played the main role in basophil histamine release induced by bacteria—both in normal individuals and asthmatic patients. 3. Sera of immunized with bacteria animals partially reduced basophil histamine release induced by homologous strains (Tab. 7). 4. An incubation of autologous bacterial strains with asthmatic patients's sera collected after autovaccines treatment has no influence on basophil histamine release induced by these microbes (Tab. 9). 5. There was no correlation between the skin reactivity to bacteria (both in healthy persons and in asthmatic patients) and the intensity of basophil histamine release induced by microbes.

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Taba H. et al. *Sparfloxacin resistance in clinical isolates of Streptococcus pneumoniae: involvement of multiple mutations in gyrA and parC genes.* Antimicrob Agents Chemother. 1998; 42(9) : 2193-6.p Abstract: Antimicrobial susceptibility testing revealed among 150 clinical isolates of Streptococcus pneumoniae 4 pneumococcal isolates with resistance to fluoroquinolones (MIC of ciprofloxacin, >/=32 microgram/ml; MIC of sparfloxacin, >/=16 microgram/ml). Gene amplification and sequencing analysis of gyrA and parC revealed nucleotide changes leading to amino acid substitutions in both GyrA and ParC of all four fluoroquinolone-resistant isolates. In the case of strains 182 and 674 for which sparfloxacin MICs were 16 and 64 microgram/ml, respectively, nucleotide changes were detected at codon 81 in gyrA and codon 79 in parC; these changes led to an Ser—>Phe substitution in GyrA and an Ser—>Phe substitution in ParC. Strains 354 and 252, for which sparfloxacin MICs were 128 microgram/ml, revealed multiple mutations in both gyrA and parC. These strains exhibited nucleotide changes at codon 85 leading to a Glu—>Lys substitution in GyrA, in addition to Ser-79—>Tyr and Lys-137—>Asn substitutions in ParC. Moreover, strain 252 showed additional nucleotide changes at codon 93, which led to a Trp—>Arg substitution in GyrA. These results suggest that sparfloxacin resistance could be due to the multiple mutations in GyrA and ParC. However, it is possible that other yet unidentified mutations may also be involved in the high-level resistance to fluoroquinolones in S. pneumoniae.

Tabe Y. et al. *[Nationwide survey of susceptibilities of clinical isolates to antibacterial agents in 1992].* Jpn J Antibiot. 1997; 50(2) : 178-86.p Abstract: This study was conducted to investigate susceptibilities of clinical isolates to imipenem (IPM) and other antibacterial agents in 144 hospital laboratories throughout Japan from September to December of 1992. In this study, the isolates were identified and susceptibility tests were performed at individual laboratories. The susceptibility tests were performed using the disk dilution method recommended by NCCLS. S. aureus (including MRSA) strains were highly susceptible to arbekacin (ABK) and netilmicin (NTL). S. pneumoniae and H. influenzae were susceptible to most of the agents tested. E. faecalis were highly susceptible to penicillins and imipenem (IPM). P. aeruginosa showed high susceptibility to ceftazidime (CAZ), IPM and amikacin (AMK). Annual changes in antimicrobial susceptibility patterns over 5 years (1988-1992) were examined. The frequency of sensitive strains of S. aureus to methicillin (DMPPC) has slightly increased from 1991 to 1992. A moderate increases of PCG-insensitive S. pneumoniae was observed. B. fragilis group showed a slight increase in sensitivity to minocycline (MINO) but no yearly changes in IPM sensitivity was observed.

Tabe Y. et al. *Molecular characterization of epidemic multiresistant Staphylococcus haemolyticus isolates.* Diagn Microbiol Infect Dis. 1998; 32(3) : 177-83.p Abstract: Fifty-five Staphylococcus haemolyticus specimens isolated from patients and neonatal intensive care unit staff were tested for susceptibility to 12 antimicrobial agents. There were 34 multidrug-resistant isolates which were resistant to oxacillin,

ampicillin, cefazolin, cefmetazole, imipenem, and gentamicin. These isolates had a higher frequency of resistance to tobramicin and ofloxacin, and relatively high MICs (2 to 4 micrograms/mL) for vancomycin, although none of the isolates were vancomycin resistant. To investigate hospital-acquired colonization and infection by multiresistant S. haemolyticus, we examined all isolates by pulsed-field gel electrophoresis (PFGE) after SmaI and SstII digestion, and detected an endemic PFGE pattern in multiresistant isolates. The results suggested that local spread of multiresistant S. haemolyticus was hospital acquired, and that the hospital staffs functioned as a reservoir.

Tabuchi M. et al. *Functional analysis of the human NRAMP family expressed in fission yeast*. Biochem J. 1999; 344 Pt 1 : 211-9.p Abstract: The Bcg/Ity/Lsh locus in the mouse genome regulates macrophage activation for antimicrobial activity against intracellular pathogens, and the positional cloning of this locus identified the Nramp1 (natural resistance-associated macrophage protein) gene. Nramp2 was initially isolated as a homologue of Nramp1. Recently, the rat divalent metal transporter DMT1 was identified electrophysiologically, and was found to be an isoform of Nramp2, a mutation which was subsequently identified in rats suffering from hereditary iron-deficiency anaemia. Despite the 64% amino acid sequence identity of Nramp1 and Nramp2, no divalent metal transport activity has yet been detected from Nramp1, and the function of Nramp1 on the molecular level is still unclear. To investigate the divalent metal transport activity of NRAMP molecules, we constructed four chimeric NRAMP genes by swapping the domains of human NRAMP1 and NRAMP2 with each other. The functional characteristics of wild-type NRAMP1, NRAMP2 and their chimeras were determined by expression in the divalent metal transporter-disrupted strain of fission yeast, pdt1Delta, and we analysed the divalent metal transport activity by complementation of the EGTA- and pH-sensitive phenotype of pdt1Delta. Replacement of the N-terminal cytoplasmic domain of NRAMP2 with the NRAMP1 counterpart resulted in inactive chimeras, indicating that the functional difference between NRAMP1 and NRAMP2 is located in this region. However, results obtained with the reverse construct and other chimeras indicated that these regions are not solely responsible for the differences in EGTA- and pH-sensitivity of NRAMP1 and NRAMP2. These findings indicate that NRAMP1 itself cannot represent the divalent metal transport activity in S. pombe and the additional protein segments of the molecules located elsewhere in NRAMP1 are also functionally distinct from their NRAMP2 counterparts.

Tacconelli E. et al. *Morbidity associated with central venous catheter-use in a cohort of 212 hospitalized subjects with HIV infection*. J Hosp Infect. 2000; 44(3) : 186-92.p Abstract: Technical complications and nosocomial bloodstream infections associated with short-term central venous catheterization remain a heavy burden in terms of morbidity, mortality and cost in HIV-positive subjects. Between 1994 and 1997, 327 central venous catheters (CVCs) inserted in 212 patients for a total of 5005 catheter days were investigated. Forty-two technical complications (13%) occurred in 40 patients. Logistic regression analysis revealed that a high APACHE III score was associated with development of CVC-related complications (P = 0.01). One hundred and eight of 327 CVCs (33%) were suspected as being infected. However only 61 episodes (61/327, 19%) were finally diagnosed as CVC-related sepsis. Three variables affecting the rate of CVC-related sepsis were identified: 1) administration of TPN (P = 0.01); 2) low number of circulating CD4+ cells (P = 0.04); 3) high APACHE III score (P = 0. 04). Doctors responsible for AIDS patients should carefully consider the relative risks and benefits of CVC insertion in an individual patient. Copyright 2000 The Hospital Infection Society.

Tadano K. et al. *[Evolution of susceptibilities of Campylobacter jejuni isolated from diarrhoeal cases to fluoroquinolones in Tokyo]*. Kansenshogaku Zasshi. 1996; 70(12) : 1227-33.p Abstract: Recently, the increase in the number of resistant strains of Campylobacter jejuni to fluoroquinolone has been reported in European countries. We also studied antimicrobial susceptibilities of 600 clinical isolates of Campylobacter jejuni isolated during a 6 year period from 1989 through 1994 in four Tokyo Metropolitan Hospitals. The susceptibility to 6 antimicrobial agents, norfloxacin (NFLX), ofloxacin (OFLX), ciprofloxacin (CPFX), nalidixic acid (NA), erythromycin (EM) and tetracycline (TC) were examined. The overall resistant rates were as follows: NFLX, 45 strains (7.5%); OFLX, 45 strains (7.5%); CPFX, 44 strains (7.3%); NA, 62 strains (10.3%); EM, 4 strains (0.6%) and TC, 259 strains (43.2%). The number of resistant strains to fluoroquinolones and NA has increased significantly since 1993 in Japan, but the susceptibility to erythromycin has still remained the same level during the past 6 years. The susceptibility to TC was variable, and MICs gave a bimobal distribution, as pointed out previously. The resistance pattern of NFLX, OFLX, CPFX and NA were observed most frequently in those isolates.

Tai S.S. et al. *Cloning of a Corynebacterium diphtheriae iron-repressible gene that shares sequence homology with the AhpC subunit of alkyl hydroperoxide reductase of Salmonella typhimurium*. J Bacteriol. 1995; 177(12) : 3512-7.p Abstract: To understand how Corynebacterium diphtheriae responds to iron limitation, we compared the sodium dodecyl sulfate-polyacrylamide gel electrophoresis (SDS-PAGE) protein profiles of both wild-type cells and iron uptake mutants grown in either high- or low-iron medium. The removal of iron by ethylene diamine di-(o-hydroxy-phenyl acetic acid) from the growth medium of wild-type cells resulted in induction of at least 14 polypeptides. DirA, a major iron-repressible polypeptide, was purified from wild-type cells by preparative SDS-PAGE, and the dirA structural gene was isolated from a genomic library of nontoxigenic C. diphtheriae. The nucleotide sequence of dirA was determined, and the deduced amino acid sequence of DirA revealed strong homologies with the AhpC subunit of Salmonella typhimurium alkyl hydroperoxide reductase and polypeptides of other microorganisms associated with oxidation reduction activity. Like AhpC, cloned DirA reduced the susceptibility of an Escherichia coli ahp mutant to cumene hydroperoxide, suggesting that DirA has alkyl hydroperoxide reductase activity.

Tain Y.L. et al. *Microbiological spectrum of septicemia and peritonitis in nephrotic children*. Pediatr Nephrol. 1999; 13(9) : 835-7.p Abstract: From April 1993 to December 1997, 452 admissions of 231 children with nephrotic syndrome to Chang Gung Children's Hospital were retrospectively reviewed. There were 10 episodes of sepsis and 8 episodes of peritonitis in 18 children, and 14 microorganisms were cultured. Two children died due to Streptococcus pneumoniae sepsis. Gram-positive microorganisms (n=7) and Gram-negative microorganisms (n=7) were found in equal numbers. Enterococcus (1), Streptococcus pneumoniae (4), group D streptococcus (1), and Streptococcus viridans (1) were the Gram-positive microorganisms cultured. Two of 4 cases of Streptococcus pneumoniae sepsis were penicillin resistant. Gram-negative microorganisms included Enterobacter cloacae (1), Klebsiella pneumoniae (1), Escherichia coli (2), Acinetobacter baumannii (1), Neisseria meningitidis (1), and group B salmonella (1). The last three microorganisms have not been previously associated with nephrotic children. Vancomycin therapy to cover penicillin-resistant Streptococcus pneumoniae and a third-generation cephalosporin therapy to cover rare Gram-negative microorganisms should be considered in serious infections of nephrotic children.

Takagi T. et al. *[Survey bacterial isolates from blood samples during 1987-1993 in our department]*. Kansenshogaku Zasshi. 1995; 69(12) : 1329-35.p Abstract: We analyzed the changes in frequency of bacterial isolates from the blood samples in our department from May 1987 to December 1993. 565 isolates from 4887 samples (11.6%) were detected. Among the detected microorganisms, the rate of gram-positivecocci (GPC) was much higher than the other kinds of the isolates each year. Especially, 80-90% of GPC were occupied by only

2 kinds of microorganisms, coagulase negative Staphylococci (CNS) and S. aureus. Among gram-negative-rods (GNR), constant increase of S. marcescens and transient increase of Enterobacter and P. aeruginosa were recognized. In 30 cases (5.3%), 2-3 kinds of microorganisms were isolated concomitantly, and in 55 cases (9.7%), the microorganisms, which was mainly caused by CNS, S. aureus and Candida, was isolated from both blood samples and the tip of the IVH catheter concomitantly. 42.5% of the bacterial positive cases in 1933 underwent 2 more kinds of the indwelling catheters and 48.3% were administrated antibiotics. Most of the cases had underlying diseases including mainly malignant tumor (leukemia, solid tumor), cerebrovascular diseases, and multiple injuries.

Takahashi A. et al. *Streptococcus pyogenes hospital-acquired infection within a dermatological ward.* J Hosp Infect. 1998; 40(2) : 135-40.p Abstract: Seventeen strains of Streptococcus pyogenes were isolated from 17 patients in the Dermatological Ward of Gunma University Hospital in Japan between June 1994 and March 1995. Of these 17 strains, 14 were isolated from the pus of skin infections, two from blood, and one from ascitic fluid. The strains showed the same minimum inhibitory concentrations; 4 mg/L of minomycin, 4 mg/L of ofloxacin and 16 mg/L of fosfomycin. T-antigen typing of the strains indicated they were T11 type. The restriction endonuclease digestion patterns of chromosomal DNA from the 17 strains were all identical. The vinyl sheet covering the bed on which the patients were treated was found to be contaminated with S. pyogenes. This strain showed identical characteristics to the strains derived from the patients. These results suggest that S. pyogenes was transmitted to patients in the Dermatological Ward from the surface of the vinyl sheet covering the bed.

Takahashi T. et al. *[Antimicrobial activities of beta-lactam antibiotics against clinically isolated Haemophilus influenzae].* Jpn J Antibiot. 1999; 52(4) : 292-301.p Abstract: Antimicrobial activities of oral beta-lactam antimicrobial agents against clinically isolated 131 strains of Haemophilus influenzae were studied. The peak of MICs of ampicillin (ABPC) was 0.20 microgram/ml. Those of cefaclor (CCL), cefotiam (CTM), cefteram (CFTM), cefpodoxime (CPDX), cefdinir (CFDN), cefditoren (CDTR), cefcapene (CFPN), and faropenem (FRPM) were 1.56, 0.39, 0.013, 0.05, 0.20, 0.013, 0.013, and 0.39 microgram/ml, respectively. The antimicrobial activities of CFTM, CDTR and CFPN were superior to those of others. There was 74.8% of ABPC-sensitive strains, of which the MICs were below 0.78 microgram/ml. The percentages of beta-lactamase-positive strains and beta-lactamase-negative ABPC-resistant H. influenzae (BLNAR) were 14.5% and 14%, respectively.

Takai S. et al. *Emergence of rifampin-resistant Rhodococcus equi in an infected foal.* J Clin Microbiol. 1997; 35(7) : 1904-8.p Abstract: To investigate the emergence of rifampin resistance in Rhodococcus equi strains isolated from foals and their environment in Japan, we compared the in vitro antimicrobial susceptibilities to rifampin of 640 isolates from 64 infected foals and 98 soil isolates from their horse-breeding farms. As a control, 39 human isolates from patients with and without AIDS were also tested for susceptibility to rifampin. All of the isolates showed rifampin sensitivity, except isolates from one infected foal and two patients with AIDS that showed rifampin resistance. To investigate the emergence of rifampin-resistant R. equi in the infected foal, which had received rifampin monotherapy for a month before euthanasia, 99 isolates of R. equi from the lesions and 20 isolates from the intestinal contents of the one foal with rifampin-resistant organisms were analyzed for rifampin susceptibilities, pathogenicities, and ribotypes. Of the 99 isolates from the lesions, all of which were virulent R. equi strains containing a virulence plasmid with a size of 85 or 90 kb, 90 (91%) isolates were rifampin resistant (MIC, > or = 12.5 microg/ml). On the other hand, of the 20 isolates from the intestinal contents, 11 (55%) isolates showed rifampin resistance (MIC, > or = 25 microg/ml), and 5 of them were avirulent R. equi strains. Among these 101 rifampin-resistant R. equi isolates with and without virulence plasmids characterized by ribotyping, 58 were type I, 20 were type II, 11 were type III, and 12 were type IV. These results demonstrated that at least eight different rifampin-resistant R. equi strains emerged concurrently and respectively from the different lesions and intestinal contents of the infected foal.

Takeda S. et al. *Methicillin-resistant Staphylococcus aureus (MRSA) isolated at Fukuoka University Hospital and hospitals and clinics in the Fukuoka city area.* Int J Antimicrob Agents. 2000; 14(1) : 39-43.p Abstract: Bacteriological and epidemiological studies were carried out on 106 isolates of methicillin-resistant Staphylococcus aureus (MRSA) isolated at our hospital (56 isolates) and from 15 other hospitals and clinics (50 isolates) in the Fukuoka city area. Strains were studied regarding coagulase-type, beta-lactamase production, and antimicrobial susceptibility; genotype studies used pulsed-field gel electrophoresis (PFGE) with cluster analysis. The majority of isolates produced coagulase type II (75.5%) and beta-lactamase (72. 6%); there was high susceptibility to arbekacin (84.9%) but no resistance to vancomycin. Dendrogram analysis of PFGE patterns identified five major clusters that generally correlated with coagulase-type and beta-lactamase production. Though isolates of two clusters were both coagulase type II and beta-lactamase producing, which was the most common circulating strain both in our hospital and other hospitals and clinics, dendrogram analysis of PFGE patterns showed that they were heterogeneous. Four genetically identical isolates from the same hospital suggested the existence of hospital-specific strains. Nine genetically identical isolates from intensive care units (ICU) in our hospital suggested that a unique strain of MRSA was found there. It had not been transmitted from another area. PFGE with cluster analysis seemed to be an essential tool to detect area-specific or hospital-specific strains undifferentiated by phenotyping. These findings confirmed that a combination of PFGE, including cluster analysis along with coagulase-type and beta-lactamase production may provide more detailed information for the epidemiological study of MRSA.

Takeuchi K. et al. *Comparison of the attachment of Escherichia coli O157:H7, Listeria monocytogenes, Salmonella typhimurium, and Pseudomonas fluorescens to lettuce leaves.* J Food Prot. 2000; 63(10) : 1433-7.p Abstract: Attachment of Escherichia coli O157:H7, Listeria monocytogenes, Salmonella Typhimurium, and Pseudomonas fluorescens on iceberg lettuce was evaluated by plate count and confocal scanning laser microscopy (CSLM). Attachment of each microorganism (approximately 10(8) CFU/ml) on the surface and the cut edge of lettuce leaves was determined. E. coli O157:H7 and L. monocytogenes attached preferentially to cut edges, while P. fluorescens attached preferentially to the intact surfaces. Differences in attachment at the two sites were greatest with L. monocytogenes. Salmonella Typhimurium attached equally to the two sites. At the surface, P. fluorescens attached in greatest number, followed by E. coli O157:H7, L. monocytogenes, and Salmonella Typhimurium. Attached microorganisms on lettuce were stained with fluorescein isothiocyanate and visualized by CSLM. Images at the surface and the cut edge of lettuce confirmed the plate count data. In addition, microcolony formation by P. fluorescens was observed on the lettuce surface. Some cells of each microorganism at the cut edge were located within the lettuce tissues, indicating that penetration occurred from the cut edge surface. The results of this study indicate that different species of microorganisms attach differently to lettuce structures, and CSLM can be successfully used to detect these differences.

Takigawa K. et al. *Comparing antimicrobial activity against resistant Pseudomonas aeruginosa using an index for the absence of cross-resistance.* J Antimicrob Chemother. 1995; 35(3) : 425-7.p Abstract: We devised an index to estimate the degree cross-resistance between piperacillin, ceftazidime, sulbactam/cefoperazone, amikacin, tobramycin, carumonam and imipenem against 139 separate clinical

isolates of Pseudomonas aeruginosa. A negative value of the index indicated the cross-resistance whereas a positive value suggested the converse making the device an index for the absence of cross resistance (ACR). Using the ACR index, we identified pairs of antibiotics exhibiting the least degree of cross-resistance and therefore the highest potential for treating infections due to P. aeruginosa.

Talan D.A. et al. *Comparison of ciprofloxacin (7 days) and trimethoprim-sulfamethoxazole (14 days) for acute uncomplicated pyelonephritis pyelonephritis in women: a randomized trial.* JAMA. 2000; 283(12) : 1583-90.p Abstract: CONTEXT: The optimal antimicrobial regimen and treatment duration for acute uncomplicated pyelonephritis are unknown. OBJECTIVE: To compare the efficacy and safety of a 7-day ciprofloxacin regimen and a 14-day trimethoprim-sulfamethoxazole regimen for the treatment of acute pyelonephritis in women. DESIGN: Randomized, double-blind comparative trial conducted from October 1994 through January 1997. SETTING: Twenty-five outpatient centers in the United States. PATIENTS: Of 378 enrolled premenopausal women aged at least 18 years with clinical diagnosis of acute uncomplicated pyelonephritis, 255 were included in the analysis. Other individuals were excluded for no baseline causative organism, inadequate receipt of study drug, loss to follow-up, no appropriate cultures, and other reasons. INTERVENTIONS: Patients were randomized to oral ciprofloxacin, 500 mg twice per day for 7 days (with or without an initial 400-mg intravenous dose) followed by placebo for 7 days (n = 128 included in analysis) vs trimethoprim-sulfamethoxazole, 160/800 mg twice per day for 14 days (with or without intravenous ceftriaxone, 1 g) (n = 127 included in the analysis). MAIN OUTCOME MEASURE: Continued bacteriologic and clinical cure, such that alternative antimicrobial drugs were not required, among evaluable patients through the 4- to 11-day posttherapy visit, compared by treatment group. RESULTS: At 4 to 11 days posttherapy, bacteriologic cure rates were 99% (112 of 113) for the ciprofloxacin regimen and 89% (90 of 101) for the trimethoprim-sulfamethoxazole regimen (95% confidence interval [CI] for difference, 0.04-0.16; P =.004). Clinical cure rates were 96% (109 of 113) for the ciprofloxacin regimen and 83% (92 of 111) for the trimethoprim-sulfamethoxazole regimen (95% CI, 0.06-0.22; P =.002). Escherichia coli, which caused more than 90% of infections, was more frequently resistant to trimethoprim-sulfamethoxazole (18%) than to ciprofloxacin (0%; P<.001). Among trimethoprim-sulfamethoxazole-treated patients, drug resistance was associated with greater bacteriologic and clinical failure rates (P<.001 for both). Drug-related adverse events occurred in 24% of 191 ciprofloxacin-treated patients and in 33% of 187 trimethoprim-sulfamethoxazole-treated patients, respectively (95% CI, -0.001 to 0.2). CONCLUSIONS: In our study of outpatient treatment of acute uncomplicated pyelonephritis in women, a 7-day ciprofloxacin regimen was associated with greater bacteriologic and clinical cure rates than a 14-day trimethoprim-sulfamethoxazole regimen, especially in patients infected with trimethoprim-sulfamethoxazole-resistant strains.

Talhouk R.S. et al. *Prevalence, antimicrobial susceptibility and molecular characterization of Campylobacter isolates recovered from humans and poultry in Lebanon.* J Med Liban. 1998; 46(6) : 310-6.p Abstract: Recovery of Campylobacter was attempted from 281 consecutive non selected out-patients diarrheic stools, 150 individual ceca collected from meat chicken breeder farms and 31 slaughtered marketed chicken obtained from shops in Lebanon. Campylobacter isolates were recovered from 2 (0.7%) human stool specimens, 34 (22.7%) chicken ceca and 3 (9.7%) raw chicken carcasses. Speciation of these isolates revealed 2 C. jejuni from humans diarrheic stools, 16 C. coli, 10 C. jejuni, 3 C. fetus, 2 C. fennelliae (Helicobacter fennelliae, new taxon), 2 C. upsaliensis, 1 C. cryaerophila (Archobacter cryaerophilus, new taxon) from chicken ceca and 2 C. coli and 1 C. fennelliae (H. fennelliae) from raw chicken carcasses. Antimicrobial susceptibility testing of the different isolates against 9 antimicrobial agents was performed using the E-test. Overall, most isolates showed high to moderate susceptibility to gentamicin (97%), amoxicillin/clavulanate (95%), clindamycin (77%), chloramphenicol (77%), and ampicillin (69%). Lower susceptibility were observed against tetracycline (49%), erythromycin (47%), ciprofloxacin (39%), and norfloxacin (36%). This overall susceptibility profile generally applied to C. coli and C. jejuni, as well, although C. coli mostly showed higher susceptibility than C. jejuni. beta-lactamase production was detected in 59% of all the isolates, being higher in C. coli (72%) than C. jejuni (33%). Whole cell protein profile analysis of 18 C. coli and 12 C. jejuni by SDS-PAGE revealed 6 different patterns. In both species, major variations existed in the region between mol wt 45-60 and all protein profiles were dominated by the presence of 5 major bands of mol wt: 61 (doublet), 45, 31 and an approximate 24. Differences in banding patterns within and between both species indicated diversity and heterogeneity of strains. This study shows that despite high prevalence and diversity of strains in chicken, Campylobacter in Lebanon is rare in human diarrheic stools compared to Salmonella (3.2%) and Shigella (1.4%).

Talon D. et al. *Clonal identification of Aeromonas hydrophila strains using randomly amplified polymorphic DNA analysis.* Eur J Epidemiol. 1998; 14(3) : 305-10.p Abstract: The suitability of arbitrary primer polymerase chain reaction (RAPD) as a typing technique was evaluated by comparing it with pulsed-field gel electrophoresis (PFGE) to characterize Aeromonas hydrophila strains isolated from a cluster of hospital-acquired infections. Five isolates from patients and 10 isolates from the water supply were compared to 10 epidemiologically unrelated strains isolated from patients and rivers. Two methods were used to prepare DNA and two primers (AP3 and AP5) were selected. The discriminatory power was better with the extractive DNA preparation than the boiling method. The discrimination of closely related from less related strains by PCR using AP3 was consistent with that by PFGE: water supply of Cholet hospital contaminated with Aeromonas species was not the source of the cluster of hospital infections and only two patients were infected with clonally-related strains. RAPD using primer AP3 was simpler, cheaper, and quicker to perform than pulsed-field gel electrophoresis and is well suited for the epidemiological study of A. hydrophila isolates.

Tambyah P.A. et al. *Catheter-associated urinary tract infection is rarely symptomatic: a prospective study of 1,497 catheterized patients.* Arch Intern Med. 2000; 160(5) : 678-82.p Abstract: BACKGROUND: Catheter-associated urinary tract infection (CAUTI) is the most common nosocomial infection, accounting for more than 1 million cases each year in US hospitals and nursing homes. OBJECTIVE: To define the clinical features of CAUTI. SETTING AND PATIENTS: A university hospital; 1,497 newly catheterized patients. DESIGN: Every day that the catheter was in place, a quantitative urine culture and urine leukocyte count were obtained, and the patient was queried by a research worker regarding symptoms. To more precisely define the role of CAUTI in patients' symptoms, a subset of 1,034 patients, 89 of whom developed CAUTI with more than 10(3) colony-forming units per milliliter, who did not have another potentially confounding site of infection besides the urinary tract, was analyzed. OUTCOME MEASURES: Presence of fever, symptoms commonly associated with community-acquired urinary tract infection, and peripheral leukocytosis. RESULTS: There were 235 new cases of nosocomial CAUTI during the study period. More than 90% of the infected patients were asymptomatic; only 123 infections (52%) were detected by patients' physicians using the hospital laboratory. In the subset analysis, there were no significant differences between patients with and without CAUTI in signs or symptoms commonly associated with urinary tract infection-fever, dysuria, urgency, or flank pain-or in leukocytosis. Only 1 of the 235 episodes of CAUTI that were prospectively studied was unequivocally associated with secondary bloodstream infection. CONCLUSIONS: Whereas CAUTIs are a major reservoir of antibiotic-resistant organisms in the hospital, they are rarely symptomatic and infrequently cause bloodstream infection. Symptoms referable to the uri-

nary tract, fever, or peripheral leukocytosis have little predictive value for the diagnosis of CAUTI.

Tambyah P.A. et al. *The relationship between pyuria and infection in patients with indwelling urinary catheters: a prospective study of 761 patients.* Arch Intern Med. 2000; 160(5) : 673-7.p Abstract: BACKGROUND: Pyuria is universally considered as essential for identifying urinary tract infections in noncatheterized patients. The utility of pyuria in the catheterized patient, to identify catheter-associated urinary tract infection (CAUTI), has not been adequately defined. METHODS: We prospectively studied 761 newly catheterized patients in a university hospital; 82 (10.8%) developed nosocomial CAUTI (> 10(3) colony-forming units per milliliter). While catheterized, each patient was seen daily, a quantitative urine culture was obtained, and the urine white blood cell concentration was measured quantitatively using a hemocytometer. RESULTS: The mean urine leukocyte count in patients with CAUTI was significantly higher than in patients without infections (71 vs 4 per microliter; P=.006). Pyuria was most strongly associated with CAUTI caused by gram-negative bacilli (white blood cell count, 121 vs 4 per microliter; P =.03); infection with coagulase-negative staphylococci and enterococci (white blood cell count, 39 vs 4 per microliter; P =.25) or yeasts (white blood cell count, 25 vs 4 per microliter; P =.15) produced much less pyuria. Pyuria with a white blood cell count greater than 10 per microliter (>5 per high-power field in a conventional urinalysis) had a specificity of 90% for predicting CAUTI with greater than 10(5) colony-forming units per milliliter but a sensitivity of only 37%. CONCLUSIONS: In patients with short-term indwelling urinary catheters, pyuria is less strongly correlated with CAUTI than in noncatheterized patients with urinary tract infection. The strongest association is with CAUTI caused by gram-negative bacilli; the association is far weaker for infections caused by gram-positive cocci or yeasts. Most patients with CAUTI are asymptomatic and do not have associated fever. Pyuria should not be used as the sole criterion to obtain a urine culture in a patient with a catheter.

Tan B.K. et al. *Anatomic basis of safe percutaneous subclavian venous catheterization.* J Trauma. 2000; 48(1) : 82-6.p Abstract: BACKGROUND: The technique of percutaneous catheterization of the subclavian vein by the infraclavicular approach is dependent on the location of the subclavian vein in relation to the clavicle. The purpose of this study was to analyze the anatomic relationship between these two structures and how it is influenced by changes in shoulder positioning. METHODS: Dissections of the infraclavicular region were performed in seven fresh cadavers and linear measurements made to determine the extent of overlap between the vein and the clavicle in different shoulder positions. RESULTS: When the shoulder was in neutral position, the subclavian vein was overlapped by the medial third or more of the clavicle and this segment of bone was able to serve as a landmark for the vein. However, shoulder elevation displaced the clavicle cephalad and reduced the degree of overlap. Mild shoulder retraction increased the area of contact between the vein and the undersurface of the clavicle, whereas protraction lifted the clavicle off the vein. CONCLUSION: Infraclavicular subclavian venipuncture should be performed with shoulders in a neutral position and also in slight retraction. An appreciation of the anatomic relationship between the clavicle and the subclavian vein is the key to successful execution of this technique.

Tan H.H. et al. *Bacterial skin infections at a tertiary dermatological centre.* Singapore Med J. 1998; 39(8) : 353-6.p Abstract: BACKGROUND: Bacterial skin infections are common clinical problems encountered in most fields of clinical medicine. Staphylococcus aureus and group A streptococci are common invaders of eczematous, traumatised or immunocompromised skin. Advances in pharmacology have introduced a wide array of new antibiotics into the physician's armamentarium, but the rising incidence of bacterial resistance continues to be a problem. A retrospective study was carried out on 331 patients at the National Skin Centre, Singapore, to establish the causes of common primary and secondary pyodermas, as well as to determine the antibiotic sensitivities of the microorganisms responsible. METHODS: A retrospective study of the medical records of 331 patients seen at the Centre for skin infections between October 1995 and May 1996 was done. Skin cultures and antibiotic sensitivity testing was carried out and the data analysed. Both primary pyodermas (impetigo, folliculitis, furuncles/carbuncles and cellulitis) and secondary pyodermas (infected ulcers and infected eczemas) were included. The results of bacterial isolation cultures and sensitivity of the organisms isolated to the commonly used antibiotics such as cloxacillin, penicillin, erythromycin and the tetracyclines were analysed. RESULTS: Staphylococcus aureus was the commonest organism isolated from both primary and secondary pyodermas, accounting for 67% and 46.7% of the organisms isolated, respectively. There was no significant difference in the racial representation in each of the various skin infections, but there was a significantly greater female representation in the infected ulcers. The secondary pyodermas had a significantly higher incidence of gram negative organisms causing infections, as well as culture results showing multiple bacterial pathogens. The methicillin resistant strains of S. aureus were commoner in the secondary pyodermas, and accounted for 4.2% of the total organisms isolated and 7% of the total strains of S. aureus. The S. aureus had a high rate of resistance (89.5%) to penicillin and ampicillin, but was very sensitive (93%) to cloxacillin, cephalexin and cotrimoxazole. The incidence of erythromycin resistance was 18.7%. CONCLUSIONS: In patients with primary pyodermas, cloxacillin should be the first line antibiotic used, with erythromycin as a useful but less preferred alternative. The favoured combination of ampicillin and cloxacillin has little place in routine treatment of skin infections, except for cellulitis and infected eczemas. A cephalosporin can also be used in these conditions if single drug therapy is desired. The secondarily infected ulcers are difficult to treat and would probably require the use of combination therapy in view of frequent mixed infections.

Tan T.Q. et al. *Clinical characteristics and outcome of children with pneumonia attributable to penicillin-susceptible and penicillin-nonsusceptible Streptococcus pneumoniae.* Pediatrics. 1998; 102(6) : 1369-75.p Abstract: OBJECTIVE: To compare the clinical characteristics, treatment, and outcome of pediatric patients with pneumonia attributable to isolates of Streptococcus pneumoniae that were either susceptible or nonsusceptible to penicillin. DESIGN: Multicenter, retrospective study. SETTING: Eight children's hospitals in the United States. PARTICIPANTS: Two hundred fifty-four children with pneumococcal pneumonia identified from patients enrolled in the United States Pediatric Multicenter Pneumococcal Surveillance Study during the 3-year period from September 1, 1993 to August 31, 1996. OUTCOME MEASURES: Demographic and clinical variables including necessity for and duration of hospitalization, frequency of chest tube placement, antimicrobial therapy, susceptibility of isolates, and clinical outcome. RESULTS: There were 257 episodes of pneumococcal pneumonia that occurred in 254 patients. Of the 257 isolates, 22 (9%) were intermediate and 14 (6%) were resistant to penicillin; 7 (3%) were intermediate to ceftriaxone and 5 (2%) were resistant to ceftriaxone. There were no differences noted in the clinical presentation of the patients with susceptible versus nonsusceptible isolates. Twenty-nine percent of the patients had a pleural effusion. The 189 (74%) hospitalized patients were more likely to have an underlying illness, multiple lung lobe involvement, and the presence of a pleural effusion than nonhospitalized patients. Fifty-two of 72 hospitalized patients with pleural effusions had a chest tube placed, and 27 subsequently underwent a decortication drainage procedure. Eighty percent of the patients treated as outpatients and 48% of the inpatients received a parenteral second or third generation cephalosporin followed by a course of an oral antimicrobial agent. Two hundred forty-eight of the patients (97.6%) had a good response to therapy. Six patients died; however, only 1 of the deaths was related to the pneumococcal infection. CONCLUSION:

The clinical presentation and outcome of therapy did not differ significantly between patients with penicillin-susceptible versus those with nonsusceptible isolates of S pneumoniae. Hospitalized patients were more likely to have underlying illnesses, multiple lobe involvement, and the presence of pleural effusions than patients who did not require hospitalization. In otherwise normal patients with pneumonia attributable to penicillin-resistant pneumococcal isolates, therapy with standard beta-lactam agents is effective.

Tan Y.T. et al. *Molecular strategies for overcoming antibiotic resistance in bacteria.* Mol Med Today. 2000; 6(8) : 309-14.p Abstract: Overuse of antibiotics in humans and livestock has led to the rapid evolution of bacteria that are resistant to multiple drugs such that even vancomycin, the drug of last resort, is no longer effective against some strains. Apart from the discovery and exploitation of the natural peptide antimicrobial agents that form part of the innate immune systems of plants and animals, there have been few new antibiotics developed in recent years. Here we review strategies designed to exploit recent advances in molecular biology, including recombinant DNA technology, molecular modelling and genomics to develop new antibacterial agents that overcome antibiotic resistance.

Tanaka-Bandoh K. et al. *Antibiotic susceptibility profiles of Bacteroides fragilis and Bacteroides thetaiotaomicron in Japan from 1990 to 1992.* Clin Infect Dis. 1995; 20 Suppl 2 : S352-5.p Abstract: The antimicrobial susceptibility of clinical isolates of Bacteroides fragilis and Bacteroides thetaiotaomicron collected from December 1990 through November 1992 was determined by the agar dilution technique. Metronidazole, imipenem, and cefoperazone/sulbactam remained highly active against both organisms. Rates of resistance to those agents were 0, 2%, and 0.9% in B. fragilis and 0, 0.9%, and 3% in B. thetaiotaomicron, respectively. Cefoxitin and other cephamycins were active against B. fragilis; rates of resistance to these agents did not tend to increase. With the inclusion of these data, the variation of rates of resistance to several agents was summarized for each year from 1987 to 1992. Rates of resistance to imipenem decreased in 1991 and 1992 among isolates of B. fragilis (2.3% in 1991, 1.8% in 1992) and B. thetaiotaomicron (2.4% in 1991, 0 in 1992). Rates of resistance to cefoxitin in B. thetaiotaomicron varied from 10% to 38% during these 6 years, though the distributional peak of MIC values did not change. The rate of resistance to ofloxacin in B. fragilis increased from 42% in 1989 to 81% in 1992. The rate of resistance to ampicillin in B. thetaiotaomicron was 68% in 1992—approximately 30% lower than before. Mostly, however, the rates of resistance to the antimicrobial agents examined did not change significantly.

Tanaka K. et al. *Biosynthesis of pyridoxine: origin of the nitrogen atom of pyridoxine in microorganisms.* J Nutr Sci Vitaminol (Tokyo). 2000; 46(2) : 55-7.p Abstract : The amide nitrogen atom of glutamine was incorporated into pyridoxine in four eukaryotes, Emericella nidulans, Mucor racemosus, Neurospora crassa and Saccharomyces cerevisiae, and two prokaryotes, Staphylococcus aureus and Bacillus subtilis, but not in the following prokaryotes, Pseudomonas putida, Enterobacter aerogenes and Escherichia coli. On the other hand, the nitrogen atom of glutamate was incorporated into pyridoxine in P. putida, E. aerogenes and E. coli, but not in S. aureus and B. subtilis. These results suggest that there are at least two different biosynthetic routes for pyridoxine and the difference does not depend on prokaryotes and eukaryotes.

Tanaka M. et al. *Antimicrobial activity of DU-6681a, a parent compound of novel oral carbapenem DZ-2640.* Antimicrob Agents Chemother. 1997; 41(6) : 1260-8.p Abstract: The in vitro antibacterial activity of DU-6681a, a parent compound of DZ-2640, against gram-positive and -negative bacteria was compared with those of penems and cephalosporins currently available. MICs at which 90% of the isolates are inhibited (MIC90s) of the compound for clinical isolates of methicillin-susceptible and -resistant Staphylococcus aureus and Staphylococcus epidermidis, including methicillin-susceptible and -resistant strains, were 0.10, 25, and 12.5 microg/ml, respectively. DU-6681a inhibited the growth of all strains of Streptococcus pyogenes and of penicillin-susceptible and -insusceptible Streptococcus pneumoniae at 0.006, 0.025, and 0.20 microg/ml, respectively, and MIC90s of the compound were 6.25 and >100 microg/ml for Enterococcus faecalis and Enterococcus faecium, respectively. MIC90s of DU-6681a were 0.20, 0.10, and 0.025 microg/ml for Haemophilus influenzae, Moraxella catarrhalis, and Neisseria gonorrhoeae, respectively. For Pseudomonas aeruginosa, the MIC50 and MIC90 of DU-6681a were 25 and 50 microg/ml, respectively. DU-6681a activity was not affected by different media, varied inoculum size (10(4) to 10(7) CFU), or the addition of human serum but was decreased under acidic conditions against gram-negative bacteria, under alkaline conditions against gram-positive bacteria, and in human urine, as was the activity of the other antibiotics tested. The frequency of spontaneous resistance to DU-6681a was less than or equal to those of the reference compounds. Time-kill curve studies demonstrated the bactericidal action of DU-6681a against S. aureus, S. pneumoniae, Escherichia coli, and H. influenzae.

Tanaka M. et al. *Effect of growth conditions on antimicrobial activity of DU-6859a and its bactericidal activity determined by the killing curve method.* J Antimicrob Chemother. 1996; 37(6) : 1091-102.p Abstract: The effect of growth conditions on the antibacterial activity of DU-6859a against Staphylococcus auerus, Escherichia coli, and Pseudomonas aeruginosa was compared with those of levofloxacin, sparfloxacin, and ciprofloxacin. This activity was not affected by different media, inoculum size or the addition of human serum, but was decreased under acidic conditions, in human urine, and in the presence of magnesium and ferrous ion, as were the other quinolones tested. Time-kill curve studies demonstrated the bactericidal action of DU-6859a against S. aureus, Streptococcus pneumoniae, E. coli, and P. aeruginosa. Morphological alteration of these bacteria after exposure to DU-6859a also demonstrated its bactericidal activity. The frequency of spontaneous resistance to DU-6859a was less than or equal to those of the reference drugs.

Tanaka M. et al. *Emergence of in vitro resistance to fluoroquinolones in Neisseria gonorrhoeae isolated in Japan.* Antimicrob Agents Chemother. 1995; 39(10) : 2367-70.p Abstract: To investigate emerging fluoroquinolone resistance in Neisseria gonorrhoeae isolated in Japan, we compared the in vitro antimicrobial susceptibilities of 79 gonococcal isolates from 1992 through 1993 to 14 fluoroquinolones and 14 other antibiotics with those of 27 isolates from between 1981 and 1984. The MICs at which 90% of the isolates were inhibited by nine fluroquinolones, including norfloxacin, enoxacin, ofloxacin, ciprofloxacin, tosufloxacin, lomefloxacin, fleroxacin, levofloxacin, and sparfloxacin, for isolates from 1992 to 1993 were 8- or 16-fold higher than those for isolates from 1981 to 1984. Furthermore, the MICs at which 90% of the isolates were inhibited by five fluroquinolones, including OPC-17116, T-3761, DU-6859a, AM-1155, and Q-35, that have recently been synthesized but have not yet been introduced for clinical use in Japan for isolates from 1992 to 1993 were also 2- to 16-fold higher than those for isolates from 1981 to 1984. The gonococcal isolates from 1992 to 1993 showed no significant decreases in susceptibility to beta-lactams, tetracyclines, macrolides, and spectinomycin, compared with those for isolates from 1981 to 1984. Our data indicate that the incidence of gonococcal strains with decreased susceptibilities to fluoroquinolones is increasing in Japan.

Tanaka M. et al. *Analysis of quinolone resistance mechanisms in a sparfloxacin-resistant clinical isolate of Neisseria gonorrhoeae.* Sex Transm Dis. 1998; 25(9) : 489-93.p Abstract: BACKGROUND AND OBJECTIVES: Recently, a reduction in the susceptibility of clinical isolates of Neisseria gonorrhoeae to newer fluoroquinolones including sparfloxacin in vitro has been recognized in Japan. The quinolone resistance mechanisms in gonococcal isolates from a patient with

clinical failure of sparfloxacin treatment was investigated. GOAL: To report a man with gonococcal urethritis in whom clinical failure of sparfloxacin treatment occurred and to examine the quinolone resistance mechanisms in gonococcal isolates from the patient. STUDY DESIGN: A man with gonococcal urethritis was treated with oral 100 mg sparfloxacin three times daily for 5 days. However, clinical failure of the sparfloxacin treatment was observed. The antimicrobial susceptibilities of pretreatment and posttreatment isolates to sparfloxacin and other agents were measured. To analyze quinolone resistance mechanisms in the set of isolates, DNA sequencing of the genes corresponding to the quinolone resistance-determining regions within the GyrA and ParC proteins was performed. We also assayed the intracellular sparfloxacin accumulation level in these gonococcal cells. Moreover, we performed pulsed-field gel electrophoresis analysis to determine whether the pretreatment and posttreatment isolates were isogenic. RESULTS: The minimum inhibitory concentration of sparfloxacin for the posttreatment isolate (4 micrograms/ml) was 16 times higher than that for the pretreatment isolate (0.25 microgram/ml). The pretreatment isolate contained three mutations, including a Ser-91 to Phe mutation and an Asp-95 to Asn mutation in GyrA and a Ser-88 to Pro mutation in ParC. The posttreatment isolate had four mutations, including the same three mutations and an additional Glu-91 to Gly mutation in ParC. The sparfloxacin accumulation level within 30 minutes in the posttreatment isolate was four times less than that in the pretreatment isolate. There were no differences in the pulsed-field gel electrophoresis patterns between the pretreatment and posttreatment isolates from the patient. CONCLUSIONS: The emergence of a fluoroquinolone-resistant N. gonorrhoeae isolate with multiple mutations involving GyrA and ParC reduced the response to sparfloxacin treatment. Multiple dosing and long-term treatment with sparfloxacin seems to induce a mutation in ParC and an alteration leading to reduced drug accumulation that contribute to increasing the fluoroquinolone resistance level.

Tanaka M. et al. *Antimicrobial resistance of Neisseria gonorrhoeae and high prevalence of ciprofloxacin-resistant isolates in Japan, 1993 to 1998*. J Clin Microbiol. 2000; 38(2) : 521-5.p Abstract: To assess the antimicrobial resistance of Neisseria gonorrhoeae isolated from 1993 through 1998 in Japan, susceptibility testing was conducted on 502 isolates. Selected isolates were characterized by auxotype and analysis for mutations within the quinolone resistance-determining region (QRDR) in the gyrA and parC genes, which confer fluoroquinolone resistance on the organism. Plasmid-mediated penicillin resistance (penicillinase-producing N. gonorrhoeae) decreased significantly from 1993-1994 (7.9%) to 1997-1998 (2.0%). Chromosomally mediated penicillin resistance decreased from 1993-1994 (12.6%) to 1995-1996 (1.9%) and then increased in 1997-1998 (10.7%). Chromosomally mediated tetracycline resistance decreased from 1993-1994 (3.3%) to 1997-1998 (2.0%), and no plasmid-mediated high-level tetracycline resistance was found. Isolates with ciprofloxacin resistance (MIC >/= 1 microg/ml) increased significantly from 1993-1994 (6.6%) to 1997-1998 (24.4%). The proline-requiring isolates were less susceptible to ciprofloxacin than the prototrophic or arginine-requiring isolates. Ciprofloxacin-resistant isolates contained three or four amino acid substitutions within the QRDR in the GyrA and ParC proteins.

Tanaka M. et al. *Genotypic evolution in a quinolone-resistant Neisseria gonorrhoeae isolate from a patient with clinical failure of levofloxacin treatment*. Urol Int. 1999; 62(1) : 64-8.p Abstract: Recently, a reduction in the antimicrobial susceptibility of clinical isolates of Neisseria gonorrhoeae to newer fluoroquinolones including levofloxacin in vitro has been recognized in Japan. We examined the quinolone resistance mechanisms in N. gonorrhoeae isolates from a patient with clinical failure of levofloxacin treatment. Man with gonococcal urethritis was treated with oral 100 mg levofloxacin 3 times daily for 7 days. However, clinical failure of the treatment was observed. The minimum inhibitory concentration of levofloxacin for the posttreatment isolate (4.0 microg/ml) was 4-fold higher than that for the pretreatment isolate (1.0 microg/ml). To analyze quinolone resistance mechanisms in the set of isolates, we performed DNA sequencing of the quinolone resistance-determining regions within the gyrA and parC genes. Moreover, we assayed the intracellular levofloxacin and norfloxacin accumulation level in these isolates. The pretreatment isolate contained three substitutions compared to susceptible wild-type isolate, including serine to phenylalanine at position 91 and aspartic acid to asparagine at position 95 in the GyrA protein, and serine to proline at position 88 in the ParC protein. The posttreatment isolate had four substitutions, including the same three substitutions and an additional glutamic acid to glutamine substitution at position 91 in ParC. There was no significant difference in the level of accumulation of levofloxacin and norfloxacin between the pretreatment and posttreatment isolates. Our results indicate that levofloxacin selects a mutant having an additional alteration within the gene cording for the ParC protein during treatment, which may have enhanced quinolone resistance in the organism.

Tanaka M. et al. *Development of fluoroquinolone resistance and mutations involving GyrA and ParC proteins among Neisseria gonorrhoeae isolates in Japan*. J Urol. 1998; 159(6) : 2215-9.p Abstract: PURPOSE: To investigate the development of fluoroquinolone resistance among Neisseria gonorrhoeae isolates in Japan and the frequency and patterns of mutations involving the GyrA and ParC proteins, which confer quinolone resistance to the bacteria, in isolates. MATERIALS AND METHODS: Antimicrobial susceptibilities of 145 gonococcal isolates, including 79 isolated from February 1992 through February 1993 and 66 isolated from February 1995 through February 1996, to six fluoroquinolones and several other antibiotics were compared with those of 27 isolates obtained from 1981 through 1984. To identify mutations in gyrA and parC genes of the isolates, the quinolone resistance-determining regions of the gyrA and parC genes were PCR-amplified and the PCR products were directly sequenced. RESULTS: The minimum inhibitory concentration for 90% of strains (MIC90) values of norfloxacin for the isolates from 1992 to 93 (4 microg./ml.) and 1995 to 96 (8 microg./ml.) were 16- and 32-fold, respectively, higher than those for isolates from 1981 to 84 (0.25 microg./ml.). The MIC90 values of ciprofloxacin for isolates from 1992 to 93 (0.5 microg./ml.) and 1995 to 96 (1 microg./ml.) showed increase of 8- and 16-fold, respectively, in comparison with those from 1981 to 84 (0.063 microg./ml.). The isolates from 1992 to 93 and 1995 to 96 were also less susceptible to newer fluoroquinolones including levofloxacin, sparfloxacin, DU-6859a and AM-1155, as compared with those from 1981 to 84. In 46 (67.6%) and 16 (23.5%) of the 68 gonococcal strains sequenced, GyrA and ParC mutations were identified, respectively. No ParC substitutions were identified in any isolates without co-existence of the GyrA mutation. A Ser-91 to Phe mutation, which was detected in 30 (65.2%) of the 46 isolates with GyrA mutations, was the most common GyrA mutation. Mutants with the single Ser-91 to Phe substitution in GyrA were 12-fold and at least 13-fold, respectively, less susceptible to norfloxacin and ciprofloxacin than the wild type. CONCLUSIONS: The results obtained in this study suggest that a high prevalence of gonococcal isolates with the Ser-91 to Phe mutation in GyrA has reduced the susceptibility of this organism to fluoroquinolones in Japan.

Tanaka M. et al. *Mechanisms of 4-quinolone resistance in quinolone-resistant and methicillin-resistant Staphylococcus aureus isolates from Japan and China*. J Med Microbiol. 1995; 42(3) : 214-9.p Abstract: Ninety-two and 33 methicillin-resistant Staphylococcus aureus (MRSA) strains were isolated in Japan and China respectively. They were categorised as ofloxacin-susceptible (MIC < 12.5 mg/L), moderately (MIC 12.5-25 mg/L) or highly (MIC > or = 50 mg/L) ofloxacin-resistant. 4-Quinolone concentrations required to inhibit purified DNA gyrase from the moderately and highly quinolone-resistant MRSA were at least 20 times higher than those required to inhibit the equivalent enzyme from quinolone-susceptible strains.

Reconstitution assays demonstrated that the 4-quinolone-resistant MRSA had a mutation in subunit A of DNA gyrase. A portion of the gyrA gene from amino acids codons 40-115 was sequenced. Four moderately resistant and seven highly resistant MRSA contained a Ser—>Leu substitution at amino acid 84; one moderately and one highly resistant MRSA and one moderately resistant methicillin-susceptible S. aureus (MSSA) strain contained a Glu—>Lys substitution at amino acid 88. Eight MRSA, including one quinolone-susceptible strain and one MSSA contained a silent mutation at amino acid 86. Uptake of ofloxacin in moderately resistant strains was almost the same in the presence or absence of carbonyl cyanide m-chlorophenylhydrazone (CCCP), whereas in highly resistant strains, uptake increased when CCCP was added. Restriction fragment length analysis of the norA gene with the restriction endonuclease SfcI showed a mutation of nucleotide position 1085 in all MRSA strains tested except for one highly quinolone-resistant strain. Thus the mechanisms of 4-quinolone-resistance in these MRSA isolates involved alterations in both DNA gyrase and antimicrobial uptake and efflux.

Taniguchi M. et al. *Production of a mixture of antimicrobial organic acids from lactose by co-culture of Bifidobacterium longum and Propionibacterium freudenreichii.* Biosci Biotechnol Biochem. 1998; 62(8) : 1522-7.p Abstract: The antimicrobial activities of standard solutions of three organic acids (lactic, acetic, and propionic acids) were compared using Micrococcus luteus, Pseudomonas sp. and Staphylococcus aureus as test microorganisms. At the same concentrations of the undissociated form, the antimicrobial activities of acetic and propionic acids were higher than that of lactic acid, irrespective of test microorganisms. In a single cultivation of Bifidobacterium longum, a mixture of lactic (17 g/l) and acetic (20 g/l) acids was produced from 50 g/l lactose and its antimicrobial activities against M. luteus, Pseudomonas sp., and S. aureus correspond to that of 32, 19, and 25 g/l of acetic acid, respectively. To increase the total antimicrobial activity, a co-culture of B. longum and Propionibacterium freudenreichii, in which lactic acid produced once from lactose by B. longum was converted to acetic and propionic acids by P. freudenreichii, was done using TPY medium containing commercially available peptones as a nitrogen source. By the sequential conversion of lactose using the two microorganisms, the culture supernatant containing a mixture of acetic (27 g/l) and propionic (13 g/l) acids without lactic acid was produced. The antimicrobial activities of the mixture against M. luteus, Pseudomonas sp., and S. aureus were 35, 30, and 26 g/l as a concentration of acetic acid, respectively, higher than that obtained in the cultivation of B. longum alone. When the medium containing an enzymatic hydrolyzate of whey proteins with a protease was used in the co-culture of B. longum and P. freudenreichii, the culture supernatant containing the mixture of organic acids was also obtained in the same manner as the co-culture using TPY medium and the activities were 43, 29, and 29 g/l as a concentration of acetic acid for M. luteus, Pseudomonas sp. and S. aureus, respectively.

Tanner M.A. et al. *Molecular phylogenetic evidence for noninvasive zoonotic transmission of Staphylococcus intermedius from a canine pet to a human.* J Clin Microbiol. 2000; 38(4) : 1628-31.p Abstract: rRNA-based molecular phylogenetic techniques were used to identify the bacterial species present in the ear fluid from a female patient with otitis externa. We report the identification of Staphylococcus intermedius from the patient and a possible route of transmission. Analysis of 16S ribosomal DNA restriction fragment length polymorphisms indicated that the dominant species present was S. intermedius. A pet dog owned by the patient also was tested and found to harbor S. intermedius. In humans, the disease is rare and considered a zoonosis. Previously, S. intermedius has been associated with dog bite wounds, catheter-related injuries, and surgery. This study represents the first reported case of a noninvasive infection with S. intermedius.

Tanner M.A. et al. *Prevalence of corynebacterial 16S rRNA sequences in patients with bacterial and "nonbacterial" prostatitis.* J Clin Microbiol. 1999; 37(6) : 1863-70.p Abstract: The etiology of chronic prostatitis syndromes in men is controversial, particularly when positive cultures for established uropathogens are lacking. Although identification of bacteria in prostatic fluid has relied on cultivation and microscopy, most microorganisms in the environment, including some human pathogens, are resistant to cultivation. We report here on an rRNA-based molecular phylogenetic approach to the identification of bacteria in prostate fluid from prostatitis patients. Positive bacterial signals were seen for 65% of patients with chronic prostatitis overall. Seven of 11 patients with bacterial signals but none of 6 patients without bacterial signals were cured with antibiotic-based therapy. Results indicate the occurrence in the prostate fluid of a wide spectrum of bacterial species representing several genera. Most rRNA genes were closely related to those of species belonging to the genera Corynebacterium, Staphylococcus, Peptostreptococcus, Streptococcus, and Escherichia. Unexpectedly, a wide diversity of Corynebacterium species was found in high proportion compared to the proportions of other bacterial species found. A subset of these 16S rRNA sequences represent those of undescribed species on the basis of their positions in phylogenetic trees. These uncharacterized organisms were not detected in control samples, suggesting that the organisms have a role in the disease or are the consequence of the disease. These studies show that microorganisms associated with prostatitis generally occur as complex microbial communities that differ between patients. The results also indicate that microbial communities distinct from those associated with prostatitis may occur at low levels in normal prostatic fluid.

Tanriover B. et al. *Bacteremia associated with tunneled dialysis catheters: comparison of two treatment strategies.* Kidney Int. 2000; 57(5) : 2151-5.p Abstract: BACKGROUND: Tunneled dialysis catheters are often used for temporary vascular access in hemodialysis patients, but are complicated by frequent systemic infections. The treatment of bacteremia associated with infected tunneled catheters requires both antibiotic therapy and catheter replacement. We compared the outcomes of two treatment strategies for catheter-associated bacteremia: exchange of the existing catheter with a new one over a guidewire versus catheter removal with delayed replacement. METHODS: We retrospectively analyzed the outcomes of all cases of tunneled dialysis catheter-associated bacteremia during a two-year period. The infection-free survival time of the subsequent catheter was evaluated in two groups of patients: group A (31 catheters), exchange of the existing infected catheter with a new catheter over a guidewire, and group B (38 catheters), removal of the infected catheter followed by delayed catheter replacement 3 to 10 days later. Patients in both groups received three weeks of systemic antibiotic therapy. Cox proportional hazard models were used to evaluate the factors predictive of infection-free survival time of the replacement catheter. RESULTS: On univariate proportional hazard regression analysis, the infection-free survival time of the replacement catheter was similar for groups A and B ($P = 0.72$), whereas the hazard of infection was significantly greater for patients with hypoalbuminemia (serum albumin < 3.5 g/dL), as compared with patients with a normal serum albumin (hazard ratio 2.81, 95% CI, 1. 21, 6.53, $P = 0.016$). The infection-free survival time was not affected by patient age, sex, diabetic status, or type of organism (gram-positive coccus vs. gram-negative rod). CONCLUSIONS: The infection-free survival time associated with the subsequent catheter is similar for the two treatment strategies. However, exchanging the catheter for a new one over a guidewire minimizes the number of separate procedures required by the patient. Hypoalbuminemia is the major risk factor for recurrent bacteremia in the replacement catheter.

Tanriverdi F. et al. *An in vitro test model for investigation of disinfection of dentinal tubules infected with Enterococcus faecalis.* Braz Dent J. 1997; 8(2) : 67-72.p Abstract: The aim of the present study was to develop an in vitro test model from human teeth to comparatively examine antibacterial effectiveness of calcium hydroxide, parachlorophenol (PCP) and camphorated parachlorophenol (CPCP) against Enterococcus faecalis in infected root canals. Cylindrical dentin

specimens were prepared from freshly extracted human maxillary anterior teeth. The specimens were inoculated with E. faecalis and then medicated with either CPCP, PCP or Ca(OH)2. The disinfecting efficacy of these agents was tested by collecting dentin chips from the inner ("canal") walls of the specimens and counting viable E. faecalis. The dentin chips were diluted and a classical bacterial count technique was used for recovery of E. faecalis strains of 5% sheep blood agar. The effectiveness of CPCP and PCP at one day was superior to the effectiveness of Ca(OH)2. In the three-day group, CPCP was the most effective, followed by Ca(OH)2. The experimental model used in this study may be useful for investigation of the effect of intracanal medicaments on microorganisms lodged in the root dentinal tubules.

Tapsall J.W. *Surveillance of antibiotic resistance in Neisseria gonorrhoeae in the WHO Western Pacific Region, 1998. The WHO Western Pacific Gonococcal Antimicrobial Surveillance Programme.* Commun Dis Intell. 2000; 24(1) : 1-4.p Abstract: Effective treatment of gonorrhoea in the World Health Organization's Western Pacific Region is hampered by the emergence and spread of antibiotic resistant strains of Neisseria gonorrhoeae. A programme of surveillance of gonococcal susceptibility to antibiotics (GASP) continued in the region in 1998. A high proportion of isolates in many participating countries was resistant to quinolones and penicillins, continuing trends observed by this programme since 1992. Resistance to the later generation cephalosporins and to spectinomycin was absent or infrequent. Options for effective treatment of gonorrhoea in the region have been severely compromised by antibiotic resistance.

Tarp B. et al. *Search for agents causing atypical pneumonia in HIV-positive patients by inhibitor-controlled PCR assays.* Eur Respir J. 1999; 13(1) : 175-9.p Abstract: Pneumonia is one of the most frequent complications in acquired immunodeficiency syndrome-patients with Pneumocystis carinii as the leading cause. The true prevalence of atypical agents such as Chlamydia pneumoniae, C. trachomatis, Legionella pneumophila and Mycoplasma pneumoniae in this population of patients is unknown as the currently used method for diagnosing these agents is measurement of antibody levels. However, this method is of limited value in human immunodeficiency virus (HIV)-positive patients who may have a compromised antibody response. To evaluate the prevalence of Chlamydia spp., Legionella spp. and M. pneumoniae in HIV-infected patients with pulmonary disease, this retrospective study has applied inhibitor-controlled polymerase chain reaction analyses on 103 bronchoalveolar lavage (BAL) fluids representing 103 episodes of pneumonia in 83 HIV-positive patients. L. pneumophila was detected in 1% of the BAL fluids and M. pneumoniae was found as a coexisting pathogen in 2% of the samples. Chlamydia spp. could not be detected in any of the BAL fluids. By culture and staining methods 106 other microorganisms were detected with P. carinii and Streptococcus pneumoniae as the most frequently occurring. Pneumonia due to Chlamydia pneumoniae, Legionella pneumophila or Mycoplasma pneumoniae seems to be rare in Danish human immunodeficiency virus-infected patients, but might be considered as a possible cause in cases of treatment failure.

Tauch A. et al. *The 51,409-bp R-plasmid pTP10 from the multiresistant clinical isolate Corynebacterium striatum M82B is composed of DNA segments initially identified in soil bacteria and in plant, animal, and human pathogens.* Mol Gen Genet. 2000; 263(1) : 1-11.p Abstract: The 51,409-bp DNA sequence of the multiresistance plasmid pTP10 from the gram-positive opportunistic human pathogen Corynebacterium striatum M82B has been determined. Fully automated genome interpretation led to the identification of 47 ORFs. Analysis of the genetic organization of pTP10 suggests that the plasmid is composed of eight DNA segments, the boundaries of which are represented by transposons and insertion sequences. The DNA segments of pTP10 are highly similar to (1) a plasmid-encoded erythromycin resistance region from the human pathogen Corynebacterium diphtheriae; (2) a chromosomal DNA region from Mycobacterium tuberculosis; (3) a plasmid-encoded chloramphenicol resistance region from the soil bacterium Corynebacterium glutamicum; (4) transposable elements from phytopathogenic gram-negative Pseudomonas, Xanthomonas and Erwinia species; and (5) a plasmid-encoded aminoglycoside resistance region from the gram-negative fish pathogen Pasteurella piscicida. The complete DNA sequence of pTP10 provides genetic information regarding the mechanisms of resistance to 16 antimicrobial agents that belong to six structural classes. In addition, the mosaic structure of pTP10 represents the evolutionary consolidation into a single plasmid molecule of antimicrobial resistances from microorganisms found in different habitats by means of mobile elements, resulting in the generation of a multiresistant bacterium that can infect humans.

Tawara Y. et al. *Methicillin-resistant Staphylococcus aureus and Candida albicans on denture surfaces.* Bull Tokyo Dent Coll. 1996; 37(3) : 119-28.p Abstract: Infectious diseases caused by methicillin-resistant Staphylococcus aureus, MRSA, and Candida albicans are often serious in compromised hosts. We enumerated MRSA and C. albicans on denture surfaces and in saliva samples from 29 adults. Staphylococcus species, MRSA, and methicillin-resistant Staphylococcus epidermidis, MRSE, were detected on 17, 3, and 1 of the 29 denture surfaces, respectively. C. albicans were detected on 22 denture surfaces. All saliva samples from patients whose dentures carried Staphylococcus species and C. albicans were also found to contain both microorganisms. Adherence of isolated 3H labeled cells of MRSA and C. albicans to resin beads and saliva-coated resin beads was examined. Cells of both microorganisms adhered in significantly higher numbers to saliva-coated resin beads than to resin beads. The hydrophobicity of the MRSA isolated from denture surfaces varied from strain to strain; that of C. albicans strains was moderately high. The zeta potentials of MRSA isolates and of C. albicans isolates determined in KCI buffer were significantly low. The potential of the resin beads decreased after treatment with saliva. Two out of 5 MRSA strains were found to be inhibited in growth by oral Streptococcus, Actinomyces, and gram-negative bacterial strains, suggesting that some oral bacterial species play a role in inhibiting the colonization of Staphylococcus species. No isolates of C. albicans were inhibited in their growth by any of the oral bacteria tested. Isolates of MRSA and C. albicans coaggregated with Porphyromonas gingivalis and Fusobacterium nucleatum strains. Using denture cleaners every night for 2 weeks did not reduce numbers of Staphylococcus species or C. albicans organisms in saliva.

Tay S.T. et al. *Two new Mycobacterium strains and their role in toluene degradation in a contaminated stream.* Appl Environ Microbiol. 1998; 64(5) : 1715-20.p Abstract: Two toluene-degrading strains, T103 and T104, were isolated from rock surface biomass in a freshwater stream contaminated with toluene. The strains exhibit different capacities for degradation of toluene and other aromatic compounds and have characteristics of the genus Mycobacterium. Both are aerobic, rod-shaped, gram-positive, nonmotile, and acid-alcohol fast and produce yellow pigments. They have mainly straight-chain saturated and monounsaturated fatty acids with 10 to 20 carbon atoms and large amounts of tuberculostearic acid that are typical of mycobacteria. Fatty acid analyses indicate that T103 and T104 are different mycobacterial strains that are related at the subspecies level. Their identical 16S rDNA sequences are most similar to Mycobacterium aurum and Mycobacterium komossense, and they constitute a new species of fast-growing mycobacteria. Ecological studies reveal that toluene contamination has enriched for toluene-degrading bacteria in the epilithic microbial community. Strains T103 and T104 play only a small role in toluene degradation in the stream, although they are present in the habitat and can degrade toluene. Other microorganisms are consequently implicated in the biodegradation.

Tayal S.C. et al. *Neisseria gonorrhoeae in Newcastle upon Tyne 1995-1997: increase in ciprofloxacin resistance.* Int J STD AIDS. 1999; 10(5) : 290-

3.p Abstract: Fluoroquinolones and third generation cephalosporins are the most effective antimicrobial agents for the treatment of gonorrhoea. However, clinically significant resistance to fluoroquinolones in Neisseria gonorrhoeae has been reported worldwide including Britain. The aim of this analysis was to study the factors relating to ciprofloxacin resistance and treatment failure. A total of 201 patients attending the Newcastle Genitourinary Medicine (GUM) clinic from 1995-1997 who were diagnosed with culture positive gonorrhoea was analysed. Treatment failure rates for ciprofloxacin were determined and the minimum inhibitory concentration (MIC) was measured for all cases of treatment failure. The case notes of all patients who had strains with MICs of ciprofloxacin in the resistant range (>0.05 microg/ml) were reviewed to determine the clinical outcome. The ciprofloxacin resistance with treatment failure was seen in 5% (8/160). All the 8 cases of treatment failure were heterosexual and had isolates resistant to penicillin and 4 cases (50%) were also resistant to tetracycline. All were sensitive to spectinomycin and ceftriaxone. Most of the cases probably acquired their infection from the Far East. As ciprofloxacin resistance seems to be associated with overseas exposure, changes in the standard treatment of gonorrhoea are not justified but consideration should be given to appropriate alternatives when the infection may have arisen from where such resistant strains are endemic. Monitoring fluoroquinolone resistance is now essential for ensuring adequate treatment of infections with resistant strains and for maximizing the time of usage of fluoroquinolones to treat gonorrhoea.

Taylor G. et al. *Peritonitis due to Stenotrophomonas maltophilia in patients undergoing chronic peritoneal dialysis.* Perit Dial Int. 1999; 19(3) : 259-62.p Abstract: The occurrence of cases of Stenotrophomonas maltophilia peritonitis in chronic peritoneal dialysis (PD) patients prompted a review of our experience with this condition. A search of microbiology records revealed seven episodes of S. maltophilia peritonitis in 7 patients in 1996 - 3.8% of all PD patients - compared to no cases in 1994 and 1995 ($p = 0.01$). Patients ranged in age from 16 to 64 years; there were 3 males and 4 females. Six of seven episodes of peritonitis were community acquired and one was hospital acquired. No temporal clustering of cases was seen. Patients were from different urban and rural communities. Patients used the same commercially supplied dialysate fluid, different dialysis techniques, and were taught a no-touch technique for connection. Treatment of peritonitis required removal of the Tenckhoff catheter in 4 of 7 cases. Fingerprinting of six available isolates by polymerase chain reaction using primers derived from the conserved region of the 16/23Sr RNA gene sequence and pulsed field gel electrophoresis revealed all to be unique strains. A case-control study comparing 7 S. maltophilia cases to 21 PD controls showed case patients to be younger and more likely to be on immunosuppressive therapy. We conclude that S. maltophilia has emerged as an important cause of peritonitis in our continuous ambulatory PD population. Evidence to date suggests community acquisition with no evidence of a common source.

Taylor M.E. et al. *Hospital-acquired infection in elderly patients.* J Hosp Infect. 1998; 38(4) : 245-60.p Abstract: Increasing numbers of elderly people are being treated in hospitals and are at particular risk of acquiring infections. The incidence, risk factors and types of hospital-acquired infection (HAI) in the elderly are reviewed. Special reference is made to urinary tract infections, respiratory tract infections, gastrointestinal infections including Clostridium difficile, bacteraemia, skin and soft tissue infections and infections with antibiotic-resistant organisms.

Taylor R. et al. *Retention of oral microorganisms on cobalt-chromium alloy and dental acrylic resin with different surface finishes.* J Prosthet Dent. 1998; 80(5) : 592-7.p Abstract: STATEMENT OF PROBLEM: The effect of surface finish of dental materials on the subsequent contamination by microorganisms. PURPOSE: This study compared the retention of Streptococcus oralis, Actinomyces viscosus, and Candida albicans on polished, sandblasted (fine and coarse) and electrobrightened cobalt-chromium alloy and dental acrylic resin to assess in vitro the effect of such techniques on prosthesis contamination. MATERIAL AND METHODS: Standardized cell suspensions were incubated with test materials for 1 hour at 37 degrees C, after which retained cells were counted by using image analysis (percentage area of a microscopic field covered by cells). RESULTS: Retention of bacterial cells was substantial (S oralis 12% to 20% and A viscosus 9% to 16%) irrespective of surface finish. Maximal retention was observed on cobalt-chromium alloy that had undergone fine sandblasting and electrobrightening ($P < .01$). For C albicans, an increase in surface roughness (0.15 to 3.53 microns) resulted in an increase in retention (3% to 9%). CONCLUSION: Cell size and the type of roughening significantly affected the retention of microorganisms on surfaces. Electrobrightening of cobalt-chromium alloy did not reduce the surface roughness or subsequent cell attachment.

Taylor S.E. et al. *Treatment options for chronic prostatitis due to vancomycin-resistant Enterococcus faecium.* Eur J Clin Microbiol Infect Dis. 1998; 17(11) : 798-800.p Abstract: Prostatitis due to vancomycin-resistant enterococci has not been previously described. Reported here is a case of chronic prostatitis due to Enterococcus faecium, resistant to vancomycin, ampicillin, ciprofloxacin and doxycycline, in a 42-year-old liver transplant recipient. Treatment with a combination of rifampin and nitrofurantoin for 6 weeks resulted in long-lasting cure. Other antimicrobial agents active in vitro against vancomycin-resistant enterococci, such as quinupristin/ dalfopristin and chloramphenicol, are unlikely to achieve sufficient prostatic tissue levels to be successfully utilized for treatment of this condition.

Taylor S.L. et al. *Surveillance for antimicrobial resistance in enterococci.* N Z Med J. 1997; 110(1047) : 251-3.p Abstract: AIM: To describe antimicrobial resistance patterns of Enterococcus species in Auckland. BACKGROUND: Antimicrobial resistant enterococci have emerged as major nosocomial pathogens in overseas hospitals. It is recommended that hospitals perform periodic surveys to determine local enterococcal resistance patterns. METHODS: Enterococcal isolates from four patient groups were tested: group I were recovered from routine clinical specimens; group II were stool isolates from patients at risk of having vancomycin resistant enterococci, eg, intensive care unit patients, patients receiving vancomycin, and immunocompromised patients receiving antibiotics; group III were enterococci from stool specimens sent for Clostridium difficile toxin testing; group IV were isolates from stool specimens submitted to a community laboratory for enteric pathogen testing. All enterococci isolated were tested for the presence of beta-lactamase, susceptibility to amoxycillin, teicoplanin, vancomycin, and for high level gentamicin and streptomycin resistance. RESULTS: There were 121 group I enterococcal isolates. 628 stool specimens were cultured. Enterococci were isolated from: 76/148 (51%) group II specimens; 166/279 (60%) group III specimens; and 70/201 (35%) of group IV specimens. Antimicrobial susceptibility testing was performed on 433 isolates; 74% were E faecalis, 12% E faecium, 6% E gallinarum/casseliflavus group and 8% other enterococcal species. No isolate produced beta-lactamase. All E faecalis were susceptible to amoxycillin. Two E faecium and one enterococcus species were resistant to amoxycillin (MICs all 16 mg/L). All isolates were susceptible to teicoplanin. Fourteen E gallinarum/casseliflavus group isolates had intermediate susceptibility to vancomycin (MICs of 8 mg/L). One E faecium had intermediate susceptibility to vancomycin (MIC 8 mg/L). High level gentamicin and streptomycin resistance occurred in 64 (15%) and 50 (12%) isolates respectively. CONCLUSION: Vancomycin resistance is rare and is essentially restricted to species that are rarely clinical pathogens, i.e., E casseliflavus and E gallinarum. Our results have established the local susceptibility profile for enterococcal isolates. This allows comparison with other locations and the detection of emerging trends of resistance.

Tebas P. et al. *Rapid development of resistance to clarithromycin following*

monotherapy for disseminated Mycobacterium chelonae infection in a heart transplant patient. Clin Infect Dis. 1995; 20(2) : 443-4.p Abstract: Mycobacterium chelonae (formerly known as M. chelonae subspecies chelonae) is a rapidly growing mycobacterium that can cause disseminated infections, especially in immunocompromised hosts. The bacterium is typically resistant to antimicrobial agents; less than 20% of M. chelonae isolates are susceptible to trimethoprim-sulfamethoxazole, doxycycline, erythromycin, or ciprofloxacin. Findings in a recent study suggested that clarithromycin may be the drug of choice for the treatment of cutaneous (disseminated) disease due to M. chelonae. We describe a 60-year-old heart transplant patient with disseminated M. chelonae infection for whom monotherapy with clarithromycin failed because of the rapid development of resistance to the drug.

Tebbs S.E. et al. *The potential reduction of microbial contamination of central venous catheters.* J Infect. 1995; 30(2) : 107-13.p Abstract: The microbial contamination of stopcock entry ports attached to central venous catheters (CVC) was determined using a specially designed swab. The swab was made of a highly porous material, Porex, and was designed to fit exactly into the entry port of stopcocks. The swab was used to determine the frequency of microbial contamination of entry ports attached to CVC in patients located on an Intensive Care Unit. Of the 200 swabs obtained 44 (22%) contained microorganisms. Coagulase-negative staphylococci were recovered from 43 of the swabs and diphtheroid bacilli from 1 swab. In vitro studies were carried out to investigate the efficiency of the swab in removing excess residual fluid and organisms from entry ports. The swab absorbed relatively large numbers of bacteria within seconds. When entry ports were inoculated with between 10(3) and 10(5) cfu of either Staphylococcus epidermidis or Klebsiella pneumoniae greater than 99% of the organisms were absorbed by the swab ($P < 0.01$). The absorbent swab was more efficient at removing S. epidermidis from the entry port when compared to a standard cotton swab ($P < 0.01$). In vitro this absorbent swab reduced the potential for catheter contamination resulting from migration of organisms from the entry port via the intraluminal route. The use of the swab in the clinical situation may reduce the incidence of CVC-related infections.

Tee N.W. et al. *Serotypes and antimicrobial resistance in Haemophilus influenzae in a hospital practice*. Ann Acad Med Singapore. 1996; 25(2) : 184-7.p Abstract: We studied the clinical spectrum, serotypes and antimicrobial resistance of Haemophilus influenzae received by our laboratory. The majority of cases involved the elderly (more than 60 years old) and children under the age of 5 years. Most infections involved the respiratory tract and were caused by non-serotypable strains. Invasive infections (meningitis, septic arthritis and bacteraemia) were infrequent and were caused by both type b and non-serotypable strains. The estimated incidence of invasive Haemophilus influenzae type b disease in children under the age of 5 years is at most 5 per 100 000 a year. Resistance to ampicillin (40.5%) and trimethoprim-sulfa (37.7%) was high and would affect the choice of antimicrobials used for treating Haemophilus influenzae infections.

Tee W. et al. *Emergence of multidrug resistance in Campylobacter jejuni isolates from three patients infected with human immunodeficiency virus.* Clin Infect Dis. 1995; 21(3) : 634-8.p Abstract: Single-drug resistance to tetracycline, doxycycline, erythromycin, or fluoroquinolones in Campylobacter isolates recovered from humans has been documented worldwide. Multidrug resistance to these antibiotics is rare in Campylobacter jejuni. We report the sequential development of multidrug resistance in C. jejuni isolates from three patients who were infected with human immunodeficiency virus. Multiple isolates recovered from stool specimens from these patients were ribotyped, and antibiotic susceptibility profiles were determined. The results indicated that each patient was infected with a single strain of C. jejuni that had progressively acquired resistance to the antibiotics used during treatment. The emergence of resistant isolates appeared to correlate with clinical relapse. In these patients, campylobacter enteritis was prolonged, severe, and relapsing, and antimicrobial therapy was required. Once these first-line antibiotics become ineffective, few other antibiotics are available for treating patients with campylobacter enteritis. Acquisition of antibiotic resistance in C. jejuni is therefore of concern in these cases.

Teichgraber U.K. et al. *[Ultrasonographically guided puncture technique for central venous vessels as a one-person technique].* Ultraschall Med. 2000; 21(3) : 132-6.p Abstract: AIM: The traditional anatomic landmark technique usually allows a rapid and easy central venous access but this technique is not always successful and can be associated with severe complications. We developed an ultrasonically guided one-operator-catheterization technique whereas a second operator to place and hold the ultrasound transducer is not necessary. METHOD: The catheterisation technique consists of 3 functional components: the swivel arm, the ultrasound unit and the conventional Seldinger central venous catheterization technique. As swivel arm we used a device with a 300 mm column with a 700 mm span attached to ultrasound unit. There were 234 catheterizations of the internal jugular vein performed in the period of January 1999 to July 1999. The indication and complication rate for the catheterization procedure was documented. RESULTS: There were 2 plexus irritations and 1 hematoma observed in all performed catheterization procedures which remained without therapeutic consequences. CONCLUSION: Once the decision for central venous access has been made the safest technique should be applied. The ultrasonically guided catheterization technique allows a fast, safe and convenient central venous access for our patients.

Teixeira L.M. et al. *Phenotypic and genotypic characterization of Vagococcus fluvialis, including strains isolated from human sources.* J Clin Microbiol. 1997; 35(11) : 2778-81.p Abstract: This study presents phenotypic and genotypic data for seven isolates of Vagococcus fluvialis, including four strains recovered from human clinical sources, one strain isolated from an environmental source, and two strains isolated from pigs. On the basis of phenotypic characteristics, most isolates were initially classified as "unidentified enterococci," because they resembled atypical arginine-negative enterococcal species. All seven strains as well as the type strain of V. fluvialis reacted with the AccuProbe Enterococcus genetic probe. The seven isolates had virtually indistinguishable whole-cell protein profiles that were similar to that of the V. fluvialis type strain and distinct from those of Enterococcus and Lactococcus species. DNA-DNA reassociation experiments confirmed that the strains were V. fluvialis. They were 71% or more related to the V. fluvialis type strain under optimum and stringent conditions, with 2.5% or less divergence within related sequences. All strains were susceptible to ampicillin, cefotaxime, trimethoprim-sulfamethoxazole, and vancomycin and were resistant to clindamycin, lomefloxacin, and ofloxacin. Strain-to-strain variation was observed in relation to susceptibilities to 18 other antimicrobial agents. Chromosomal DNA was analyzed by pulsed-field gel electrophoresis (PFGE) after digestion with SmaI. Distinctive PFGE patterns were generated, suggesting the nonclonal nature of V. fluvialis strains. Although the number of strains was small, this report provides molecular characterization of V. fluvialis and the first evidence of a possible connection of this species with human infections.

Tekstra J. et al. *Infection of human endothelial cells with Staphylococcus aureus induces the production of monocyte chemotactic protein-1 (MCP-1) and monocyte chemotaxis.* Clin Exp Immunol. 1999; 117(3) : 489-95.p Abstract: Bacterial infection coincides with migration of leucocytes from the circulation into the bacterium-infected tissue. Recently, we have shown that endothelial cells, upon binding and ingestion of Staphylococcus aureus, exhibit proinflammatory properties including procoagulant activity and increased intercellular adhesion molecule-1 (ICAM-1) and vascular cell adhesion molecule-1 (VCAM-1) expression on the cell surface, resulting in hyperadhesiveness, mainly for monocytes. The enhanced extravasation of monocytes to bacterium-infected sites is facilitated by the local production of chemo-

tactic factors. From another study we concluded that the locally produced chemokine MCP-1 is important in the recruitment of monocytes to the peritoneal cavity in a model of bacterial peritonitis. In the present study we investigated whether cultured human endothelial cells after infection with bacteria produce and release MCP-1, which in turn stimulates monocyte chemotaxis. We observed that endothelial cells released significant amounts of MCP-1 within 48 h after ingestion of S. aureus. This was dependent on the number and the virulence of the bacteria used to infect the endothelial cells. The kinetics as well as the amount of MCP-1 released by S. aureus-infected endothelial cells differed markedly from that released by endothelial cells upon stimulation with IL-1beta. Supernatant from S. aureus-infected or IL-1beta-stimulated cells promoted monocyte chemotaxis which was almost entirely abrogated in the presence of neutralizing anti-MCP-1 antibody, indicating that most of the chemotactic activity was due to the release of MCP-1 into the supernatant. Our findings support the notion that endothelial cells can actively initiate and sustain an inflammatory response after an encounter with pathogenic microorganisms, without the intervention of macrophage-derived proinflammatory cytokines.

Temiz O. et al. *Synthesis and microbiological activity of some novel 5- or 6-methyl-2-(2,4-disubstituted phenyl) benzoxazole derivatives.* Farmaco. 1998; 53(5) : 337-41.p Abstract: The synthesis of a new series of 5-or 6-methyl-2-(2,4-disubstituted phenyl) benzoxazoles (4, 5) is described in order to determine their antimicrobial activities and feasible structure-activity relationships. The synthesized compounds were tested in vitro against three Gram-positive bacteria, three Gram-negative bacteria and the yeast Candida albicans, in comparison with several control drugs. Microbiological results exhibited that the synthesized compounds possess a broad spectrum of antibacterial activity against the tested microorganisms. The compounds 4b and 4c indicated some antibacterial activity against Staphylococcus aureus having a minimum inhibitory concentration (MIC) of 12.5 micrograms/ml. Moreover, the compound 5a revealed a significant antibacterial activity against the enterobacter Pseudomonas aeruginosa showing a MIC value of 25 micrograms/ml, i.e. more potent than the control drugs tetracycline and streptomycin. For the antimycotic activity against the yeast C. albicans, the derivative 4c was found to be more active than the other synthesized compounds with a MIC value of 12.5 micrograms/ml, but one-fold less potent than the control drugs oxiconazole and haloprogin.

ten Hagen A.J. et al. *[Pleural empyema in mechanically ventilated patients with pneumonia].* Ned Tijdschr Geneeskd. 1999; 143(5) : 255-9.p Abstract: Two males aged 41 and 32 years developed pneumonia which responded inadequately to antibiotic treatment and necessitated mechanical ventilation. It was only after surgical and digital opening, drainage of pus pockets and daily pleural lavage that the clinical picture improved. The microorganisms cultured from both patients included Streptococcus milleri, probably acquired by aspiration. Thoracic empyema as a complication of pneumonia is clinically recognised by lack of response to antimicrobial agents. For the diagnosis, ultrasonographic and CT imaging, followed by pleural puncture are used. Simple parapneumonic effusions are managed by drainage with or without rinsing with normal saline, while in advanced empyema, instillations with fibrinolytic agents have proved safe and effective. Sometimes, video-assisted thoracoscopic or conventional surgery is necessary to clear the pleural space, while in complicated cases, extensive surgical procedures are warranted.

Tenover F.C. *The best of times, the worst of times. The global challenge of antimicrobial resistance.* Pharm World Sci. 1995; 17(5) : 149-51.p Abstract: The development of resistance to antimicrobial agents by many bacterial pathogens has compromised traditional therapeutic regimens, making treatment of infections more difficult and frequently more expensive. Three factors have contributed to the development and spread of resistance: mutations in common genes that extend their spectrum of resistance, transfer of resistance genes among diverse microorganisms and increases in selective pressures in and outside of the hospital environment that enhance the development of resistant organisms. Some new resistance mechanisms are difficult to detect in the laboratory. Thus, resistant microorganisms may go unnoticed until they are widely disseminated in a hospital. The challenge for pharmacists, microbiologists and physicians is not only to contain the spread of existing resistant organisms, but also to prevent the emergence of new resistant pathogens by encouraging the rational and prudent use of antimicrobial agents.

Tenover F.C. *Implications of vancomycin-resistant Staphylococcus aureus.* J Hosp Infect. 1999; 43 Suppl : S3-7.p Abstract: Strains of Staphylococcus aureus with reduced susceptibility to glycopeptides have been reported from Japan (multiple strains), the United States (four strains), and Europe (France, the UK and Spain) and the Far East (Hong Kong and Korea). The isolates from the US, France, and strain Mu50 from Japan, demonstrate vancomycin MICs of 8 microg/mL by broth microdilution testing and appear to have developed from pre-existing methicillin-resistant S. aureus (MRSA) infections. The strain from the UK and other parts of Europe appears heteroresistant to vancomycin and has MIICs in the 1-2 microg/mL range. Many of the isolates with reduced susceptibility to glycopeptides have been associated with therapeutic failures with vancomycin. Although nosocomial spread of the glycopeptide-intermediate S. aureus (GISA) strains has not been observed in US hospitals or in Europe, spread of GISA strains has apparently occurred in Japan. Laboratory studies have indicated that the disk diffusion test, the Stoke's method, and several automated methods of antimicrobial susceptibility testing do not detect GISA strains. The requirement to choose from a relatively small number of acceptable techniques for screening may well influence the ability of laboratories to conduct surveillance for these organisms. Finally, the isolation of such strains in three geographically distinct regions suggests that this phenomenon will continue to occur worldwide.

Tenover F.C. et al. *Evaluation of commercial methods for determining antimicrobial susceptibility of Streptococcus pneumoniae.* J Clin Microbiol. 1996; 34(1) : 10-4.p Abstract: Seven commercial systems for antimicrobial susceptibility testing of Streptococcus pneumoniae were evaluated by using a challenge set of 55 pneumococcal isolates with a variety of resistance phenotypes and genotypes. Overall, the results produced by the Pasco and Etest methods were found to be acceptable for all drugs tested except for trimethoprim-sulfamethoxazole testing by the Etest. The Just One system for penicillin MIC testing was also judged to be acceptable (minor error rate, 5.5%). Although the Sensititre and MicroTech methods both produced 12.7% minor errors with penicillin, the Sensititre method classified penicillin-intermediate strains as resistant or vice versa, while four of MicroTech's errors were among intermediate strains that were classified as susceptible. The MicroMedia (minor error rate, 16.4%) and MicroScan Rapid (minor error rate, 63.6%) methods produced unacceptably high levels of errors when testing penicillin. Minor error rates for cefotaxime and ceftriaxone ranged from a low of 12.7% (Etest and Sensititre) to a high of 28% (MicroMedia). Error rates were low for erythromycin, tetracycline, and chloramphenicol by most methods with the exception of the MicroScan method, which had a high very major error rate for erythromycin (34.6%). For testing of beta-lactam drugs, the Pasco, Etest, and Just One tests for penicillin are the most accurate methods; the Sensititre method also provided acceptable results.

Tenover F.C. et al. *Detection and reporting of organisms producing extended-spectrum beta-lactamases: survey of laboratories in Connecticut.* J Clin Microbiol. 1999; 37(12) : 4065-70.p Abstract: Extended-spectrum beta-lactamases (ESBLs) are enzymes produced in some gram-negative bacilli that mediate resistance to extended-spectrum cephalosporins and aztreonam. They are most common in Klebsiella spp. and Escherichia coli but are present in a variety of Enterobacteriaceae. Resistance mediated by these enzymes can be

difficult to detect depending on the antimicrobial agents tested. AmpC beta-lactamases are related to the chromosomal enzymes of Enterobacter and Citrobacter spp. and also mediate resistance to extended-spectrum cephalosporins and aztreonam in addition to cephamycins, such as cefoxitin. Unlike ESBLs, however, AmpC beta-lactamases are not inhibited by clavulanic acid or other similar compounds. To assess the abilities of various antimicrobial susceptibility testing methods to detect ESBLs, we sent three ESBL-producing organisms, one AmpC-producing organism, and a control strain that was susceptible to extended-spectrum cephalosporins to 38 laboratories in Connecticut for testing. Eight (21.0%) of 38 labs failed to detect extended-spectrum cephalosporin or aztreonam resistance in any of the ESBL- or AmpC-producing isolates. Errors were encountered with both automated and disk diffusion methods. Conversely, seven (18.4%) labs categorized at least some of the four resistant isolates as potential ESBL producers and reported the results with the extended-spectrum cephalosporins and aztreonam as resistant as suggested by current National Committee for Clinical Laboratory Standards (NCCLS) guidelines. The percentage of laboratories that failed to detect resistance in the ESBL or AmpC isolates ranged from 23.7 to 31.6% depending on the type of enzyme present in the test organism. This survey suggests that many laboratories have difficulty detecting resistance in ESBL and AmpC-producing organisms and may be unaware of the NCCLS guidelines on modifying susceptibility testing reports for ESBL-producing strains.

Tenover F.C. et al. *Ability of commercial and reference antimicrobial susceptibility testing methods to detect vancomycin resistance in enterococci*. J Clin Microbiol. 1995; 33(6) : 1524-7.p Abstract: We evaluated the abilities of 10 commercially available antimicrobial susceptibility testing methods and four reference methods (agar dilution, broth microdilution, disk diffusion, and the agar screen plate) to classify enterococci correctly as vancomycin susceptible or resistant using 50 well-characterized strains of enterococci. There was a high level of agreement of category classification data obtained with broth-based systems (Sceptor, MicroMedia, Pasco, and Sensititre), agar dilution, and an antibiotic gradient method (E test) with data obtained by reference broth microdilution; no very major or major errors were seen, and minor errors were < or = 6%. Increased minor error rates were observed with disk diffusion (12%), Alamar (16%), Uniscept (16%), and conventional (overnight) MicroScan panels (16%). The errors were primarily with Enterococcus casseliflavus strains and organisms containing the vanB vancomycin resistance gene. Very major error rates of 10.3 and 20.7% were observed with Vitek and MicroScan Rapid (MS/Rapid) systems, respectively; however, only the MS/Rapid system produced major errors (13.3%). On repeat testing of discrepant isolates, the very major error rate with the Vitek system dropped to 3.4%, while the very major error rate with the MS/Rapid system increased to 27.6%; major errors with the MS/Rapid system were not resolved. Many of the commercial systems had only 4 dilutions of vancomycin, which resulted in up to 84% of values being off scale (e.g., Uniscept). Of the methods tested, most conventional broth- and agar-based methods proved to be highly accurate when incubation was done for a full 24 h, although several of the tests had high minor error rates. Automated systems continued to demonstrate problems in detecting low-level resistance.

Terashi K. et al. *Interactions of ofloxacin and erythromycin with the multidrug resistance protein (MRP) in MRP-overexpressing human leukemia cells.* Antimicrob Agents Chemother. 2000; 44(6) : 1697-700.p Abstract: To investigate interactions between the multidrug resistance protein (MRP) and antimicrobial agents, we examined the effects of 12 agents on vincristine sensitivity and efflux of the calcein acetoxy-methyl ester (calcein-AM) of a MRP substrate in MRP-overexpressing cells. Only ofloxacin and erythromycin enhanced sensitivity with increased intracellular vincristine accumulation and inhibited the calcein-AM efflux. Our findings suggest that the two agents are possible MRP substrates and may competitively inhibit MRP function as a drug efflux pump.

Terpstra S. et al. *Rapid emergence of resistant coagulase-negative staphylococci on the skin after antibiotic prophylaxis.* J Hosp Infect. 1999; 43(3) : 195-202.p Abstract: One approach for prosthetic vascular surgery is to continue antimicrobial prophylaxis while intravascular lines and catheters are in place. However this may give rise to antimicrobial resistance in the colonizing bacterial flora. We studied 37 patients undergoing vascular surgery, who received either co-amoxyclav for three days (group 1), ofloxacin plus metronidazole for three days (group 2) or for one day (group 3), respectively. Seventeen hospitalized patients not undergoing surgery or receiving antibiotics were studied as controls. In groups I and II there was a significant decline in susceptibility to cloxacillin (12.8% respectively 23.6%) and ofloxacin (0.5% and 85% respectively) in skin staphylococci. The results from group 3 were intermediate. Molecular typing showed that the patient's susceptible community-derived strains were replaced by genetically unrelated resistant strains, probably hospital derived. Long-term prophylaxis should be avoided as colonization occurs with resistant strains.

Terra R.M. et al. *Remaining Small Bowel Length: Association with Catheter Sepsis in Patients Receiving Home Total Parenteral Nutrition: Evidence of Bacterial Translocation*. World J Surg. 2000; 24(12) : 1537-1541.p Abstract: Patients with short bowel syndrome (SBS) receiving total parenteral nutrition (TPN) have a high incidence of catheter-related sepsis, one of its major complications. The aim of this study was to correlate the length of remaining small bowel (RSB) with septic episodes related to the central venous catheter in a group of patients with severe SBS with home TPN. The length of the RSB (<50 cm or >/=50 cm) was related to the frequency of catheter sepsis, time until the first episode, and the agents responsible in eight SBS patients receiving home TPN. There were 13 episodes of catheter infection (0.88 per patient-year). The group with a shorter RSB length (five patients) presented 1.3 to 2.76 infections/year and 2 to 9 months until the first episode, compared to 0 to 0.75 infections/year ($p = 0.0357$) and 11 to 65 months until the first episode ($p = 0.0332$) in the group with the longer RSB. In the first group, the agents isolated were Enterobacteriae (Enterobacter sp., Klebsiella sp., Pseudomonas sp., and Proteus sp.) in eight episodes and Candida sp. in one. In the latter sepsis was caused by Staphylococcus sp. in three episodes and Pseudomonas sp. in one. Therefore patients with remaining small bowel shorter than 50 cm have a higher frequency of catheter-related sepsis, particularly by enteric microorganisms. This might be an evidence of the occurrence of bacterial translocation and its role in the pathogenesis of catheter-related sepsis in patients with an extremely short RSB receiving home TPN.

Teshager T. et al. *Surveillance of antimicrobial resistance in Escherichia coli strains isolated from pigs at Spanish slaughterhouses.* Int J Antimicrob Agents. 2000; 15(2) : 137-42.p Abstract: Antimicrobial resistance can make the efficient treatment of bacterial infections in humans and animals more difficult. Antimicrobial use in food animals may be one of the factors contributing to resistance. The Spanish surveillance network VAV has established a baseline of antimicrobial resistance in Escherichia coli strains from healthy pigs. Minimum inhibitory concentration and patterns of resistance to antimicrobials used in animals and humans were determined for 205 faecal strains isolated in a sampling frame of four slaughterhouses in Spain from 220 pigs in 1998. Higher levels of resistance were seen against antimicrobial agents authorised for use in food animals especially tetracycline, sulphonamides, trimethoprim and amoxycillin. All isolates were susceptible to antimicrobials employed mainly in humans such as ceftazidime, cefotaxime, imipenem, aztreonam and amikacin.

Thajeb P. et al. *MRI appearance of spinal lesions: metastatic tumors or infections?* Chin Med J (Engl). 1995; 108(11) : 839-43.p Abstract: Three patients with pathologically verified spinal osteomyelitis and another three with metastatic tumors of the spine were investigated. MRI of th spine of four patients showed several unusual findings. The preservation of intervertebral discs and endplates did not pre-

dict accurately the diagnosis of either infections or tumors. The "pepper and salt" appearing feature may also occur in a metastatic tumor. Plain radiographs, CT, and radioisotope bone scans were less sensitive than MRI to disclose the lesions. In cases of osteomyelitis, the systemic sources of infections were frequently not found, and the responsible microorganisms could not be identified even from the surgical specimens of two patients. However, mycobacterium tuberculosis was found in the surgical specimen of a patient with cervical spinal lesion whose MRI was indistinguishable from a metastatic tumor. Surgicopathological diagnosis was therefore crucial and mandatory in these instances.

Thanigaraj S. et al. *Retrieval of an IV catheter fragment from the pulmonary artery 11 years after embolization.* Chest. 2000; 117(4) : 1209-11.p Abstract: The use of a peripherally inserted central catheter (PICC) is occasionally complicated by intravascular fracture and central embolization of the catheter fragment. We present a patient in whom a PICC fragment was retrieved from the pulmonary artery 11 years after embolization following its incidental detection. Despite a history of IV drug abuse and mitral regurgitation, this patient remained asymptomatic and without complications. The catheter fragment was retrieved since the patient was believed to be at risk for endocarditis. This may be the longest duration reported of an embolized catheter fragment that was successfully removed. As the natural history of asymptomatic-retained central venous foreign bodies remains unclear, the decision to remove them should be individualized. In selected cases, these foreign bodies may be retrieved without complications even several years after embolization.

Thibon P. et al. *Randomized multi-centre trial of the effects of a catheter coated with hydrogel and silver salts on the incidence of hospital-acquired urinary tract infections.* J Hosp Infect. 2000; 45(2) : 117-24.p Abstract: Catheters coated with hydrogel and silver salts have been proposed to prevent hospital-acquired urinary tract infections (UTI). We carried out a randomized, prospective, double-blind multi-centre trial to compare those catheters with classical urinary tract catheters. We included in the study 199 patients requiring urethral catheterization for more than three days: 109 in group 1 (classical catheter) and 90 in group 2 (catheter coated with hydrogel and silver salts). Urine from the patients was tested for 10 days after the insertion of the catheter (reactive dipsticks each day and diagnostic urinalysis every two days). The UTI associated with catheterization was defined on the basis of bacterial and cytological criteria (>10(5)cfu bacteria per mL and >10 leucocytes per mm(3)). Twenty-two UTIs were recorded: 13 in group 1 and nine in group 2. The cumulative incidence of UTI associated with catheterization was 11.1% overall, 11.9% for group 1 and 10% for group 2; the odds ratio was 0.82 (95% confidence interval: 0.30 to 2. 20); the cumulative incidence for UTI, calculated by the Kaplan-Meier method was 36.3 overall, 35.2 in group 1 and 36.0 in group 2; the overall incidence density was 19 per thousand days of catheterization, 21 in group 1 and 18 in group 2. The differences between the two groups were not significant. Overall, we feel that there is not enough evidence to conclude that catheters coated with silver salts and hydrogel give greater protection than classical catheters and to recommend widespread use. Copyright 2000 The Hospital Infection Society.

Thirumalaikumar M. et al. *Synthesis, characterization and antimicrobial studies of metal(II) bis-chelates and mixed-ligand complexes of alpha-(2-hydroxyphenyl)-N-(1-phenyl-2-nitroethyl)nitrone.* Boll Chim Farm. 1999; 138(5) : 207-10.p Abstract: This paper describes the synthesis of complexes of the type MB2. 2H2O and CuBL.2H2O where BH = alpha-(2-hydroxyphenyl)-N-(1-phenyl-2-nitroethyl)-nitrone, M = copper(II)/cobalt(II)/nickel(II) and LH = salicylaldehyde/salicylaldoxime/8-hydroxyquinoline/2-hydroxypyridine. The magnetic moment, ligand field spectra, thermal and ESR studies reveals that these dihydrates possess octahedral geometry. The antimicrobial studies of these complexes against several microorganisms such as Staphylococcus aureus, Escherichia coli, Klebsiella aerogenes, Salmonella typhi and Pseudomonas sp. have been tested and reported in comparison with ceftazidime standard.

Thomas F. et al. *[Candida albicans fungemia with pulmonary localization treated with fluconazole. A case report].* Rev Pneumol Clin. 2000; 56(1) : 37-40.p Abstract: We report a case of Candida albicans fungemia complicated by a pulmonary localization in a non-immunocompromised patient. Complete recovery was obtained after a long course of high-dose fluconazole in spite of in vitro resistance of the Candida to fluconazole. The usefulness of fluconazole therapy, the best dosage regimen and the in vitro and in vivo correlations are discussed.

Thomas J.C. et al. *Quantitative flow cytometric detection of specific microorganisms in soil samples using rRNA targeted fluorescent probes and ethidium bromide.* Cytometry. 1997; 27(3) : 224-32.p Abstract: Specific detection and accurate enumeration of microorganisms in the environment have been hampered by the lack of suitable techniques. A three-parameter flow cytometric method (FCM) was developed to detect quantitatively Sphingomonas sp. strain 107 inoculated into soil samples. By combining light scattering profiles (i.e., morphological properties), ethidium bromide (EtBr) influx (i.e., wall permeability), and fluorescence in situ hybridization against the 16S rRNA (i.e., detection specificity), we could accurately discriminate the bacterium of interest from the indigenous microflora and soil debris. EtBr was used, first, to determine the optimal cell wall permeabilization treatment to allow oligonucleotide probes to enter the bacterial cells and, second, to achieve clear discrimination of fixed cells from debris in soil samples. This method allowed effective qualitative and quantitative analysis by fluorescence in situ hybridization. The results showed that the detection threshold by FCM was 3 x 10(4) cells/g of dry soil. Cell counts deduced from FCM analysis were similar to those obtained by the colony forming unit assay when soils contained fewer than 3 x 106 cells/g dry soil. This method should be useful for either quantitative monitoring of microorganisms inoculated in contaminated soil samples during bioremediation or detecting known bacterial strains in environmental samples.

Thomas J.G. et al. *Long-term sub-antimicrobial doxycycline (Periostat) as adjunctive management in adult periodontitis: effects on subgingival bacterial population dynamics.* Adv Dent Res. 1998; 12(2) : 32-9.p Abstract: Previous trials had indicated that various schedules of sub-antimicrobial doxycycline significantly reduced gingival crevicular fluid (GCF) collagenase activity in adult patients with periodontitis with no evidence of emergent tetracycline-resistant (Tcr) marker oral flora. The purpose of this nine-month study was to expand these observations, emphasizing newer microbial diagnostic methods. Subgingival paper point samples were obtained at baseline (BL), 3, 6, and 9 months. Four subject treatment groups in a double-blind design were evaluated by mechanical scaling and root planing (SRP) and/or 20 mg doxycycline BID (Periostat). Thirty-eight patients entered the study at baseline (BL). Dark-field microscopy on 260 samples showed that morphotype distribution was independent of treatment schedule. Culture analysis of the 3 most prevalent isolates recovered showed that Streptococcus and Prevotella species accounted for approximately 85% of the 724 cultures. There did not appear to be any overgrowth or replacement by opportunistic oral flora. Of 658 susceptibility patterns evaluated by Etest, the MIC50/90 and mode MIC showed stable patterns, independent of treatment group. Our findings were different from those of previously published reports, but may be partly explained by the lack of universally standardized methods in oral microbiology and interpretive criteria for susceptibility testing.

Thomas S.E. et al. *Asymptomatic inferior vena cava abnormalities in three children with end-stage renal disease: risk factors and screening guidelines for pretransplant diagnosis.* Pediatr Transplant. 2000; 4(1) : 28-34.p Abstract: We report two children with end-stage renal disease (ESRD) found to have inferior vena cava (IVC) thrombosis at the

time of renal transplantation. The children suffered from renal diseases that included congenital hepatic fibrosis and portal hypertension as part of their pathophysiology. Neither child had evidence of hypercoaguability or clinical symptoms of IVC thrombosis. Prior to transplantation, the renal replacement therapy consisted primarily of peritoneal dialysis. During their hospital courses, these children had central venous catheters placed for temporary hemodialysis, episodes of peritonitis and numerous abdominal surgeries. The medical literature to date has not identified a link between IVC thrombosis and portal hypertension, nor has an association between the patients' primary renal disease and IVC thrombosis been found. We also report the finding of asymptomatic IVC narrowing in a third patient with obstructive uropathy, colonic dysmotility and numerous abdominal surgeries. IVC narrowing was diagnosed by CT scan during his pretransplant evaluation. In this paper, we consider similarities between these three patients that may have predisposed each of them to asymptomatic IVC pathology, including large-bore central venous access as young children and/or recurrent scarring abdominal processes. A discussion regarding appropriate screening of the 'high-risk patient' for IVC pathology prior to kidney transplantation and surgical options for children with this rare complication are presented.

Thompson R.L. et al. *General principles of antimicrobial therapy.* Mayo Clin Proc. 1998; 73(10) : 995-1006.p Abstract: Antimicrobial agents are appropriate treatment for acute, severe, persistent, or progressive infectious diseases. The efficacy of treatment depends on the accuracy of the diagnosis of infection and the appropriateness of the antimicrobial agent for the causative microorganism. In this symposium, the antimicrobial agents reviewed correspond with the bacterial, fungal, viral, mycobacterial, parasitic, chlamydial, and other microorganisms that cause disease in humans. Usually, the etiologic possibilities can be limited on the basis of the history and physical examination, laboratory tests, or results of treatment trials. Many of the same findings, however, can result from noninfectious, other inflammatory, or unknown mechanisms. Manifestations such as fever and organ dysfunction are nonspecific and often not caused by an infectious process. Even when infection is clinically apparent, the causative microorganism may not be identified, and empiric treatment with broad-spectrum agents is appropriate in many cases of serious disease.

Thomson R.B. Jr et al. *Role of the clinical microbiology laboratory in the diagnosis of infections.* Cancer Treat Res. 1998; 96 : 143-65.p Abstract: The proper use and interpretation of clinical microbiology test results may be complicated but critical to the care of cancer patients. The microbiology laboratory director is often available to offer advice concerning the differential diagnosis, choice of specimens, as well as the optimal stains and cultures to facilitate diagnosis. Additionally, the rapid interpretation of Gram-stained smears provides useful, occasionally lifesaving, information relative to the etiologic diagnosis and empiric antimicrobial therapy. The microbiology laboratory director should also provide further interpretation of culture and antimicrobial testing results that allow the clinical service to focus on the most critical data. Person-to-person or telephone conversations discussing important laboratory information should be followed up by a written summary report placed in the patient's chart so all services involved share the same interpretation (Figure 2). The clinical service has an important responsibility to communicate with the laboratory to optimize care of the patient with cancer. The laboratory compiles data collected from groups of patients that is available and useful to physicians. Review and discussion of test utilization is essential for cost-effective, quality health care. This may include analysis of blood cultures documenting an acceptable level of contamination, appropriate number collected per day, and sufficient blood volume per culture. In addition, information about changing resistance patterns or nosocomial transmission can be provided to the clinician. As patients with malignancies become more complex and their infections increasingly difficult to treat, regular interaction between the laboratory and clinician is likely to improve patient care.

Thornsberry C. *Emerging resistance in clinically important gram-positive cocci.* West J Med. 1996; 164(1) : 28-32.p Abstract: In the first half of the decade of the 1990s, we in the United States have seen the emergence and escalation of substantial antimicrobial resistance in medically important gram-positive cocci. The incidence of methicillin resistance of Staphylococcus aureus continues to increase (now 18%), resulting in many more isolates that are multiply resistant; all S aureus isolates are still susceptible to vancomycin. Enterococci, particularly Enterococcus faecium, have increasingly developed resistance to penicillin, gentamicin, streptomycin, and vancomycin (the last plasmid-mediated). More than a fourth of Streptococcus pneumoniae strains are now resistant to penicillin, and these strains tend to be multiply resistant, including to cephalosporins and macrolides.

Thornsberry C. *Trends in antimicrobial resistance among today's bacterial pathogens.* Pharmacotherapy. 1995; 15(1 Pt 2) : 3S-8S.p Abstract: Resistance of nosocomial and community-acquired pathogens to antimicrobial agents is a serious problem with significant clinical consequences. Microbiologic surveillance data, such as those provided by the National Nosocomial Infections Surveillance System, supply information on current nosocomial pathogens in the United States. Many species show resistance to commonly used antimicrobials and, in many cases, it is emerging resistance. Resistance in many gram-negative bacteria is caused by beta-lactamase production. Escherichia coli, the leading nosocomial pathogen, is capable of hyperproducing TEM-1 beta-lactamase. A novel form of resistance in Klebsiella pneumoniae and E. coli is caused by extended-spectrum cephalosporinases. Many Enterobacteriaceae can be induced to produce group 1 beta-lactamase by exposure to broad-spectrum cephalosporins and other beta-lactams. Thirty percent of Haemophilus influenzae isolates are resistant to ampicillin because of beta-lactamase production. Issues of concern in gram-positive species include multiple antimicrobial resistance in methicillin-resistant Staphylococcus aureus, enterococci, and coagulase-negative staphylococci, and increasing beta-lactam resistance in Streptococcus pneumoniae. To minimize the development of resistance, antimicrobials must be administered judiciously, and infection-control practices must be instituted and followed.

Thornsberry C. et al. *Resistance surveillance of Streptococcus pneumoniae, Haemophilus influenzae and Moraxella catarrhalis isolated in the United States, 1997-1998.* J Antimicrob Chemother. 1999; 44(6) : 749-59.p Abstract: A national antimicrobial resistance surveillance study was conducted from December 1997 to May 1998 to determine the prevalence of antimicrobial resistance in 6620 clinical isolates of Streptococcus pneumoniae, Haemophilus influenzae and Moraxella catarrhalis. In this centralized study, which involved 163 institutions located in 43 states, we determined MICs for representatives of five antimicrobial classes: beta-lactams (penicillin, co-amoxiclav, cefuroxime, ceftriaxone), macrolides (azithromycin, clarithromycin), co-trimoxazole, glycopeptides (vancomycin) and fluoroquinolones (levofloxacin). In most S. pneumoniae isolates, all antimicrobials were to be found active, but amongst penicillin-resistant isolates (MICs > or = 2 mg/L), resistance to other beta-lactams, macrolides and co-trimoxazole was common. For vancomycin and levofloxacin, however, activity was not associated with penicillin resistance. The prevalence of penicillin-nonsusceptible (intermediate and resistant) pneumococci was highest in the South Atlantic (44%) and East South Central (43%) regions and lowest in the Mid-Atlantic (28%) and New England (28%) regions. Resistance to beta-lactams, macrolides and co-trimoxazole was more commonly found amongst respiratory isolates than blood isolates and in strains from patients < or = 12 years old than from older patients. beta-lactamase, which was detected in 33% of H. influenzae and 92% of M. catarrhalis strains, did not affect the activity of the beta-lactams under study other than ampicillin. Certain agents, such as vancomycin and the fluoroquinolones, remain highly active,

and well-designed surveillance systems that monitor MIC distributions would be needed to detect a potential for reduced susceptibility. In addition, surveillance programmes should be designed to collect information about associated resistance as well as differences in prevalence associated with region, specimen source and patient age.

Thornsberry C. et al. *Surveillance of antimicrobial resistance in Streptococcus pneumoniae, Haemophilus influenzae, and Moraxella catarrhalis in the United States in 1996-1997 respiratory season. The Laboratory Investigator Group.* Diagn Microbiol Infect Dis. 1997; 29(4) : 249-57.p Abstract: A U.S. surveillance study of antimicrobial resistance in respiratory tract pathogens in the respiratory season (1996-1997) is reported that included 11,368 isolates from 434 institutions in 45 states and the District of Columbia. beta-lactamase was produced by 33.4% of Haemophilus influenzae and 92.7% of Moraxella catarrhalis. Of the 9,190 Streptococcus pneumoniae isolates tested, 33.5% were not susceptible to penicillin (MIC > or = 0.12 microgram/mL), with 13.6% having high-level resistance (MICs > 1 microgram/mL). For H. influenzae, the most active antimicrobials (based on percent of strains susceptible) were levofloxacin (100%) and ceftriaxone (99.9%); the least active were ampicillin (67.2%) and clarithromycin (58.1%). For M. catarrhalis, the most active drugs were amoxicillin-clavulanate, ceftriaxone, and levofloxacin (100%); the least active was ampicillin. The order of the activity of the drugs against S. pneumoniae were levofloxacin (97.3%) > ceftriaxone (87.1%) > amoxicillin-clavulanate (81.7%) = clarithromycin (80.9%) > cefuroxime (74.5%) > penicillin (66.5%). The activity of the beta-lactams and clarithromycin against isolates of S. pneumoniae was closely associated with the resistance to penicillin. Levofloxacin was more active against S. pneumoniae overall, because it exhibited no cross-resistance. These data indicate that the incidence of beta-lactamase production in H. influenzae (33.4%) and M. catarrhalis (92.7%) is similar to other recent studies, and that the incidence of penicillin-intermediate and -resistant S. pneumoniae is increasing, particularly the high-level penicillin-resistant (MICs > 1 microgram/mL) strains, which were often multi-resistant.

Thornsberry C. et al. *In vitro activity of grepafloxacin and 25 other antimicrobial agents against Streptococcus pneumoniae: correlation with penicillin resistance.* Clin Ther. 1998; 20(6) : 1179-90.p Abstract: Strains of Streptococcus pneumoniae from the United States that were susceptible, intermediately resistant, or highly resistant to penicillin were tested for susceptibility to 26 antimicrobial agents that have been used or considered for the treatment of patients with pneumococcal infections. The drugs tested included penicillins, one penicillin/beta-lactamase inhibitor combination, cephalosporins, macrolides, a lincosamide, fluoroquinolones, and four miscellaneous drugs (vancomycin, rifampin, tetracycline, and trimethoprim-sulfamethoxazole). The activities of the penicillins and macrolide agents were similar, but the activities within the cephalosporin and fluoroquinolone classes were often dissimilar. For the fluoroquinolones, the order of in vitro activity, from most to least active, was grepafloxacin, sparfloxacin, levofloxacin, ciprofloxacin, and ofloxacin. Increased resistance to penicillin in the pneumococcal isolates studied correlated with increased resistance to other penicillins, cephalosporins, macrolides, clindamycin, tetracycline, and trimethoprim-sulfamethoxazole but did not correlate with increased resistance to the fluoroquinolones, rifampin, or vancomycin. These findings may be helpful to health professionals selecting empiric therapy for respiratory tract infections involving S. pneumoniae.

Thornsberry C. et al. *Survey of susceptibilities of Streptococcus pneumoniae, Haemophilus influenzae, and Moraxella catarrhalis isolates to 26 antimicrobial agents: a prospective U.S. study.* Antimicrob Agents Chemother. 1999; 43(11) : 2612-23.p Abstract: An antimicrobial susceptibility surveillance study of Streptococcus pneumoniae, Haemophilus influenzae, and Moraxella catarrhalis isolates was performed during the winter of 1996-1997 in order to determine their susceptibilities to 5 fluoroquinolones and 21 other antimicrobial agents. Broth microdilution MICs were determined for 2, 752 isolates from 51 U.S. medical centers. Of the 1,276 S. pneumoniae isolates, 64% were susceptible, 17% were intermediate, and 19% were highly resistant to penicillin. On the basis of the MICs at which 90% of isolates are inhibited and modal MICs, the hierarchy of the five fluoroquinolones from most to least active was grepafloxacin > sparfloxacin > levofloxacin = ciprofloxacin > ofloxacin. For S. pneumoniae isolates for which penicillin MICs were elevated, the MICs of the cephalosporins, macrolides, clindamycin, tetracycline, and trimethoprim-sulfamethoxazole were also elevated, but the MICs of the fluoroquinolones, vancomycin, and rifampin were not. The prevalence of penicillin-susceptible pneumococci varied by U.S. Bureau of the Census region (range, 44% in the East South Central region to 75% in the Pacific region). In addition, S. pneumoniae isolates from blood were significantly more susceptible to penicillin than those from respiratory, ear, or eye specimens, and pneumococci from patients </=2 years old were significantly more resistant to penicillin than those from older patients (by chi-square analysis, P < 0.05). beta-Lactamase was produced by 35% of H. influenzae isolates and 93% of M. catarrhalis isolates, resulting in increased MICs of amoxicillin and certain cephalosporins. We noted that the antimicrobial resistance patterns of S. pneumoniae isolates, which correlate with the penicillin susceptibility phenotype, vary by site of infection, age group of the patient, and geographic source of the isolate.

Thornsberry C. et al. *Antimicrobial resistance in respiratory tract pathogens: results of an international surveillance study.* Chemotherapy. 2000; 46 Suppl 1 : 15-23.p Abstract: An international surveillance study was performed to assess the resistance patterns among respiratory tract pathogens during the winter of 1997-1998. The pathogens studied included Streptococcus pneumoniae, Haemophilus influenzae and Moraxella catarrhalis. The antibiotics tested included five beta-lactams (penicillin, ampicillin, amoxicillin, amoxicillin-clavulanic acid, cefuroxime axetil and ceftriaxone), two macrolides (azithromycin and clarithromycin), one sulfonamide (trimethoprim-sulfamethoxazole), one glycopeptide (vancomycin) and one fluoroquinolone (levofloxacin). A total of 11,502 isolates were tested from nine countries, using microdilution susceptibility tests as recommended by National Committee for Clinical Laboratory Standards (NCCLS) guidelines. The susceptibility rates varied greatly around the world. Ninety percent of M. catarrhalis isolates produced beta-lactamase, making them resistant to ampicillin. beta-Lactamase production by H. influenzae ranged from 5% in Germany to 34% in the USA (mean 17.5%). Of the S. pneumoniae isolates, 32.8% had some resistance to penicillin, but this ranged greatly from 7.8% in Germany to 66.5% in France. Penicillin resistance in S. pneumoniae was associated with resistance to other beta-lactams, macrolides and sulfonamides, but not to levofloxacin or vancomycin. All isolates of H. influenzae and M. catarrhalis were susceptible to levofloxacin. Results of this study support the conclusion that these three respiratory tract pathogens are becoming more resistant to selected antimicrobials, and that the level of resistance in these isolates to the antimicrobials varies greatly from one country to another.

Thornsberry C. et al. *Comparative activity of eight antimicrobial agents against clinical bacterial isolates from the United States, measured by two methods.* Am J Med. 1996; 100(6A) : 26S-38S.p Abstract: In a surveillance study conducted during 1992-1993 at 83 medical institutions of different types and sizes (e.g., laboratories, community hospitals, teaching hospitals) and from different geographical areas of the United States, clinical bacterial isolates were tested for their susceptibility to eight comparative antimicrobial agents (cefepime, ceftazidime, cefotaxime, ceftriaxone, ciprofloxacin, gentamicin, imipenem, and piperacillin). A total of 12,574 isolates were tested by either the Etest method (AB Biodisk) or a microdilution method (MicroScan) in the participating laboratories; 11.8% of these isolates were subsequently retested for quality assurance purposes by both methods in a central laboratory. The results obtained in the central laboratory were essentially the same as the results obtained in the

participating laboratories. This article presents data for gram-negative and gram-positive isolates other than Streptococcus pneumoniae, the results of which have been previously published. Antimicrobial susceptibility results obtained with the two different minimum inhibitory concentration (MIC) methods—MicroScan and Etest—showed that most isolates of Enterobacteriaceae were susceptible to cefepime, exceeding the activity of ceftazidime, ceftriaxone, and cefotaxime, principally because of the greater activity of cefepime against the species that produce Bush group 1 beta-lactamases (predominantly Enterobacter cloacae, Enterobacter aerogenes, and Citrobacter freundii). In addition, the activity of cefepime against Pseudomonas aeruginosa isolates was essentially equivalent to that of ceftazidime and greater than that of third-generation cephalosporins. Most methicillin-susceptible Staphylococcus aureus were susceptible to all the cephalosporins, whereas methicillin-resistant S. aureus and enterococci were resistant. Overall, the most active antimicrobials in this study were imipenem, ciprofloxacin, and cefepime, but the activity of all the antimicrobials varied with different species. Categorically, the results from the microdilution and Etest methods were equivalent.

Thorpe S. et al. *The use of a blood conservation pressure transducer system in critically ill patients.* Anaesthesia. 2000; 55(1) : 27-31.p Abstract: We tried to determine if a blood conservation pressure transducer system reduced blood transfusions, increased haemoglobin concentration or reduced line infections in critically ill patients. One hundred patients were randomly allocated to conventional or blood conserving systems attached to systemic and pulmonary arterial catheters. Intravascular lines were cultured after removal. There were no significant differences in transfusions or haemoglobin concentration. Blood conservation: median units transfused, 2 (range 0-19); mean haemoglobin at 7 days, 11.2 g.dl-1 (SD, 1.0). Conventional: median units, 2 (range 0-34); mean haemoglobin at 7 days, 11.1 g.dl-1 (SD 1.0). Thirty-seven of 99 arterial lines were colonised in the controls compared with 29 of 96 in the blood conservation group. Patients who required haemofiltration in both groups had significantly increased transfusion requirements. Haemofiltration: median 6 units (range 0-34) vs. non-haemofiltered: median 1 (range 0-14; $p < 0.001$). There were no significant differences in transfusions, haemoglobin concentration or line colonisation with the blood conservation system. There is considerable potential for blood conservation during haemofiltration.

Threlfall E.J. et al. *Antibiotic resistance in Escherichia coli isolated from blood and cerebrospinal fluid: a 6-year study of isolates from patients in England and Wales.* Int J Antimicrob Agents. 1997; 9(3) : 201-5.p Abstract: A study of the incidence of resistance to antimicrobial drugs in Escherichia coli from blood and CSF made in England and Wales in the 6-year period 1991 1996 has demonstrated a significant increase in the incidence of strains resistant to ampicillin and ciprofloxacin, two antibiotics used for first-line therapy of invasive disease. In particular, there has been a dramatic change in the occurrence of isolates with low level or high level resistance to ciprofloxacin; over 90% of isolates in the high level group were also resistant to at least four other antimicrobials. Physicians in England and Wales should be aware that there is now an increasing possibility of treatment failures when ciprofloxacin is used for the treatment of invasive E. coli infections.

Thwaites R.T. et al. *Drug resistance in Campylobacter jejuni, C coli, and C lari isolated from humans in north west England and Wales, 1997.* J Clin Pathol. 1999; 52(11) : 812-4.p Abstract: AIMS: To test the sensitivity of strains of Campylobacter species isolated from humans in England and Wales against a range of antimicrobial agents for the purpose of monitoring therapeutic efficacy and as an epidemiological marker. METHODS: An agar dilution breakpoint technique was used to screen isolates against ampicillin, chloramphenicol, gentamicin, kanamycin, neomycin, tetracycline, nalidixic acid, ciprofloxacin, and erythromycin. Minimal inhibitory concentrations (MIC) were also determined for a sample of quinolone resistant strains. RESULTS: Approximately 50% of strains tested were resistant to at least one drug. Strains which were resistant to four or more of the drugs tested were classified as multiresistant; this occurred in 11.3% of C jejuni, 19.9% of C coli, and 63.6% of C lari. Resistance to erythromycin occurred in 1.0% of C jejuni and 12.8% of C coli. Resistance to quinolones occurred in 12% of strains, with a ciprofloxacin MIC of > 8 mg/l and a nalidixic acid MIC of > 256 mg/l; a further 4% of strains had intermediate resistance with a ciprofloxacin MIC of between 0.5 and 2 mg/l (fully sensitive strains, 0.25 mg/l or less) and a nalidixic acid MIC of between 32 and 64 mg/l (fully sensitive strains, 8 mg/l or less). CONCLUSIONS: Resistance to quinolones in campylobacters from human infection may relate to clinical overuse or use of fluoroquinolones in animal husbandry. Both veterinary and clinical use should be reconsidered and fluoroquinolone drugs used only as a treatment for serious infections requiring hospital admission. Erythromycin resistance is still rare in C jejuni but much more common in C coli.

Tichy J. et al. *Extraction, assay, and analysis of antimicrobials from plants with activity against dental pathogens (Streptococcus sp.).* J Altern Complement Med. 1998; 4(1) : 39-45.p Abstract: Many dental and periodontal diseases are largely a question of bacterial etiology. Dental caries develop due to an increase of strongly acidogenic and aciduric gram-positive bacteria while common forms of periodontal disease are linked to anaerobic gram-negative bacteria in subgingival plaque. Many plants and plant-derived antimicrobial components are used in folklore therapeutics for the treatment of periodontal disorders and for the purposes of oral hygiene. Some have been evaluated for possible use in modern medicine, while thousands of other potentially useful/plants have not been tested. In this study, we evaluated the feasibility of screening for antibacterials isolated from plants with activity against three representatives of oral streptococci. We developed and tested the following methodologies: (1) Extraction of antibacterial components from plants; (2) Assays for antibacterial activity; (3) Chromatographic methods for initial analysis of compounds of interest. The screening process for plant antimicrobials consisted of extraction of plant material and assay of antibacterial activity using a spotting test with the selected oral streptococci as indicator strains. In addition, we developed chromatographic procedures that allow characterization and optimization of initial isolation steps. Depending on the indicator microorganisms used, the screening assay can target additional pathogens including other streptococci (group A and B, and pneumococci) and periodontal pathogens such as Porphyromonas. Also, we noted that the activity of some extracts varied against different oral bacteria. Our conclusion, supported by extensive data, was that the screening for antimicrobials from plants is a feasible approach to the identification of natural compounds with antimicrobial properties against dental pathogens.

Tiendrebeogo A. et al. *[Nature and sensitivity of bacteria superinfecting plantar ulcers caused by leprosy at the Marchoux Institute, Bamako, Mali].* Acta Leprol. 1999; 11(4) : 153-9.p Abstract: To determine potential usefulness of antimicrobial agents and to guide their prescription in the treatment of leprosy plantar ulcers, we conducted an in vitro study about germs' nature and sensitivity to antibiotics. We took samples of plantar ulcers secretion from 107 patients at Marchoux Institute. 92.5% of those ulcers were infected. These samples revealed 145 strains of micro-organisms among those, Staphylococcus aureus (70 strains) and genus Pseudomonas (41 strains) were the most frequent. These bacteria were resistant to several antibiotics currently used at Marchoux Institute (tetracycline, penicillin, cotrimoxazol and erythromicin). Antibiotics, efficient at 80% on tested strains, were expensive for patients. They cannot be recommended for the treatment of local infections. These results outline that the main treatment in plantar ulcers is based upon antiseptic solutions and keeping feet at rest. Antibiotherapy in case of extension of local infection would be based on the results of a previous study of sensitivity.

Tierney S.N. et al. *Cost comparison of electrocardiography versus fluoroscopy for central venous line positioning in children.* J Am Coll Surg. 2000; 191(2) : 209-11.p Abstract: BACKGROUND: Although most central venous lines in children are positioned using fluoroscopy, electrocardiography (ECG) has been shown to be accurate, and avoids unnecessary radiation exposure. We studied whether ECG may also have cost advantages. STUDY DESIGN: All ports and Hickman/Broviac catheters placed during a 2.5-year period were reviewed. Two surgeons routinely used fluoroscopy, and two used ECG. Costs included surgeon and anesthesia fees, operating room use, and fluoroscopy equipment and personnel. RESULTS: There were 287 cases with sufficient data to be included in the study (167 fluoroscopy and 120 ECG). In the ECG group, 12 (10%) were converted to fluoroscopy because an adequate tracing could not be obtained, but they were kept in the ECG group for data analysis. The groups were similar with regard to age, gender, indication, previous catheters, and intraoperative or postoperative complications. Time for surgical placement of the line was not significantly affected by the positioning technique. Ports placed using ECG were less costly than those placed fluoroscopically ($2,880+/-408 versus $3,595+/-357, p<0.001), and the same was true for tunneled external catheters ($2,249 +/- 435 versus $2,923+/-350, p<0.001). CONCLUSIONS: The ECG technique was less costly than fluoroscopy, despite a 10% conversion rate. At our center, the savings were approximately $700 per procedure. Because operating room time used is similar, the additional cost of fluoroscopy can be attributed to the need for x-ray equipment and personnel.

Till A.E. et al. *The cutaneous microflora of adolescent, persistent and late-onset acne patients does not differ.* Br J Dermatol. 2000; 142(5) : 885-92.p Abstract: The cutaneous microbiology and antibody status to Propionibacterium acnes of patients with persistent (males, n = 32; females, n = 33) and late-onset (females, n = 25) acne were compared with individuals with adolescent acne (males, n = 22; females, n = 18) and normal control volunteers (persistent acne: males, n = 26; females, n = 30; late-onset: females, n = 20). Males had significantly higher grades of acne compared with females ($P < 0.05$). The microflora consisted in the main of propionibacteria, staphylococci and Malassezia; other bacteria represented less than 0.01% of the total microflora. At all sites for all samples there were significantly more propionibacteria than staphylococci or Malassezia ($P < 0.05$). There were significantly higher ($P < 0.05$) numbers of microorganisms in follicular casts from patients compared with their control volunteers for female facial skin and male back skin. Twenty-six papules and 48 normal follicles were analysed. A bimodal distribution of microbial colonization was noted, with about 90% of normal follicles and about 10% of acne follicles having no detectable viable microorganisms. Anti-P. acnes IgG antibody titres were measured using a secondary fluorescein isothiocyanate antibody technique, and no significant differences in titre were found between any groups of patients ($P > 0.05$). Correlation analysis showed no association between the population densities of P. acnes and anti-P. acnes IgG titres. There were no differences in the microbiology of skin of adolescent acne patients, persistent acne patients or late-onset acne patients which could account for these various forms of acne.

Tillenburg B. et al. *[Helicobacter pylori: pretherapeutic resistance status in Germany (Ruhr area)].* Z Gastroenterol. 1997; 35(3) : 165-9.p Abstract: BASIC PROBLEM AND OBJECTIVE OF STUDY: The situation of pretherapeutical antimicrobial drug resistance of Helicobacter pylori has therapeutical implications. For this reason the present study was designed to evaluate the frequency of resistance in Germany. MATERIAL AND METHODS: A total of 201 H. pylori isolates cultured on the basis of biopsies taken by routine gastroscopies were tested for resistance by E-test. The antibiotics examined were amoxicillin, tetracycline, clarithromycin and metronidazole. For further analysis the last 101 patients were asked for demographical and clinical data that were evaluated for a correlation with metronidazole resistance. RESULTS: Pretherapeutical resistance against amoxicillin and tetracycline was not detected. The rate of drug resistance against clarithromycin came to 3% and against metronidazole to 29%. There was a higher incidence of metronidazole resistance in female patients (Odds ratio 1.71; p = n.s.). Reliable predictors for metronidazole resistance, however, could not be identified. CONCLUSIONS: About 30% of H. pylori isolates are pretherapeutically resistant to metronidazole. Resistance to clarithromycin is still rare, but further monitoring remains necessary to detect changes in the community.

Titov L. et al. *Isolation and molecular characterization of Clostridium difficile strains from patients and the hospital environment in Belarus.* J Clin Microbiol. 2000; 38(3) : 1200-2.p Abstract: Toxigenic Clostridium difficile is the most common etiologic agent of hospital-acquired diarrhea in developed countries. The role of this pathogen in nosocomial diarrhea in Eastern Europe has not been clearly established. The goal of this study was to determine the prevalence of C. difficile in patients and the hospital environment in Belarus and to characterize these isolates as to the presence of toxin genes and their molecular type. C. difficile was isolated from 9 of 509 (1.8%) patients analyzed and recovered from 28 of 1,300 (2. 1%) environmental sites cultured. A multiplex PCR assay was used to analyze the pathogenicity locus (PaLoc) of all isolates, and strain identity was determined by an arbitrarily primed PCR (AP-PCR). The targeted sequences for all the genes in the PaLoc were amplified in all C. difficile strains examined. A predominantly homogeneous group of strains was found among these isolates, with five major AP-PCR groups being identified. Eighty-three percent of environmental isolates were classified into two groups, while patient isolates grouped into three AP-PCR types, two of which were also found in the hospital environment. Although no data on the role of C. difficile infection or epidemiology of C. difficile-associated diarrhea (CDAD) in this country exist, the isolation of toxigenic C. difficile from the hospital environment suggests that this pathogen may be responsible for cases of diarrhea of undiagnosed origin and validates our effort to further investigate the significance of CDAD in Eastern Europe.

Tobe S.W. et al. *Vinblastine and erythromycin: an unrecognized serious drug interaction.* Cancer Chemother Pharmacol. 1995; 35(3) : 188-90.p Abstract: Vinblastine and erythromycin are among the most commonly used chemotherapeutic and antimicrobial agents, respectively. No interaction between the two has ever been reported. Towards the end of a phase I study of vinblastine plus oral cyclosporin (to reverse multidrug resistance), three patients also received erythromycin to raise their cyclosporin levels. All developed severe toxicity consistent with a much higher vinblastine dose than was actually given. This apparent potentiation of vinblastine toxicity has not been previously described.

Tokars J.I. *Description of a new surveillance system for bloodstream and vascular access infections in outpatient hemodialysis centers.* Semin Dial. 2000; 13(2) : 97-100.p Abstract: Bloodstream and vascular access infections are a threat to hemodialysis patients. However, there are few studies of rates of such infections and there are no standardized methods for ongoing data collection. Because of frequent hospitalizations and receipt of antimicrobials, hemodialysis patients are at high risk for infection with drug-resistant bacteria. This article describes a new voluntary national surveillance system. Each month participating dialysis center personnel will record the number of chronic hemodialysis patients that they treat (broken down into four types of vascular access). A one-page form will be completed for each hospitalization or in-unit IV antimicrobial start among these patients. These data will allow calculation, stratified by type of vascular access, of several rates, including hospitalizations, in-unit IV antimicrobial starts, and vascular access infections. For individual dialysis centers, this surveillance system will provide a simple and standardized method for recording data, calculating rates, and comparing rates over time. It is hoped that collection and examination of these data will lead to quality improvement measures. For government and

the medical and public health communities, aggregation of these data from many dialysis centers will provide a wealth of information that is not currently available. For further information, or to receive a protocol for this study, contact Elaine R. Miller, RN, MPH, at (404)639-6422 (telephone), (404)639-6459 or 6458 (fax), or erm4@cdc.gov (e-mail:). Information is also available on the CDC website at http:@www.cdc.gov/ncidod/hip/Dialysis/dialysis.+ ++htm.

Tokars J.I. et al. *Secular trends in bloodstream infection caused by antimicrobial-resistant bacteria in New Jersey hospitals, 1991 to 1995.* Am J Infect Control. 1997; 25(5) : 395-400.p Abstract: INTRODUCTION: Antimicrobial resistance among bacteria is an increasing public health problem. In 1991, New Jersey was the first state to establish statewide, hospital-based surveillance for antimicrobial-resistant bacteria. METHODS: Each month, all 96 nonfederal New Jersey hospital laboratories complete a form listing the species identity and drug susceptibility results for selected antimicrobial-resistant bacteria isolated from blood cultures from hospital inpatients. Penicillin-resistant Streptococcus pneumoniae and aminoglycoside-resistant gram-negative rods were studied from 1991 to 1995. Vancomycin-resistant enterococci and imipenem-resistant gram-negative rods were studied from 1992 through 1995. RESULTS: From 1992 to 1995, the vancomycin-resistant enterococci bloodstream infection prevalence rate increased from 11 to 29 per 100,000 hospital admissions ($p < 0.001$); the rate was higher at larger hospitals, urban and inner-city hospitals, and teaching hospitals. From 1991 to 1995, the penicillin-resistant S. pneumoniae bloodstream infection rate increased from 1.1 to 9.9 per 100,000 admissions ($p < 0.001$). In contrast, bloodstream infection rates did not change significantly for imipenem-resistant (12.5 during 1992 and 14.1 during 1995, $p = 0.4$) or aminoglycoside-resistant (8.0 during 1991 and 6.8 during 1995, $p = 0.4$) gram-negative rods. CONCLUSIONS: We found that vancomycin-resistant enterococci and penicillin-resistant S. pneumoniae, but neither of two groups of antimicrobial-resistant gram-negative rods, are increasing rapidly in prevalence in New Jersey. Continued monitoring and interventions to slow these increases are needed.

Tokars J.I. et al. *The prevalence of colonization with vancomycin-resistant Enterococcus at a Veterans' Affairs institution.* Infect Control Hosp Epidemiol. 1999; 20(3) : 171-5.p Abstract: OBJECTIVE: To study vancomycin-resistant Enterococcus (VRE) prevalence, risk factors, and clustering among hospital inpatients. DESIGN: Rectal-swab prevalence culture survey conducted from February 5 to March 22, 1996. SETTING: The Veterans' Affairs Medical Center, Atlanta, Georgia. PATIENTS: Hospital (medical and surgical) inpatients. RESULTS: The overall VRE prevalence was 29% (42/147 patients). The VRE prevalence was 52% (38/73 patients) among patients who had received at least one of six specific antimicrobials during the preceding 120 days, compared with only 5% (4/74) among those who had not received the antimicrobials (relative risk, 9.6; P<.001). The longer the period (up to 120 days) during which antimicrobial use was studied, the more closely VRE status was predicted. Among 67 hospital patients in 28 multibed rooms, clustering of VRE among current roommates was not found. CONCLUSIONS: At this hospital with relatively high VRE prevalence, VRE colonization was related to antibiotic use but not to roommate VRE status. In hospitals with a similar VRE epidemiology, obtaining cultures from roommates of VRE-positive patients may not be as efficient a strategy for identifying VRE-colonized patients as obtaining screening cultures from patients who have received antimicrobials.

Tolerico P.H. et al. *Femoral endarteritis as a complication of percutaneous coronary intervention.* J Invasive Cardiol. 2000; 12(3) : 155-7.p Abstract: Infectious complications following percutaneous coronary interventions are extremely unusual, with a reported frequency of less than 1%. This report describes a patient who developed septic endarteritis as a complication of percutaneous coronary intervention and reviews the literature of this complication.

Tollefson L. et al. *Antibiotic use in food animals: controlling the human health impact.* J AOAC Int. 2000; 83(2) : 245-54.p Abstract: Resistance to antimicrobial drugs has compromised control of many bacterial pathogens. For foodborne pathogens, the most likely source of resistance is use of antimicrobials in food-producing animals. To control the human health impact from use of antimicrobials in animals, the U.S. Food and Drug Administration (FDA) recently announced plans to assess the microbial safety of all antimicrobials intended for use in food-producing animals. This paper describes the history of antimicrobial use and regulation in animals, the public health concern, the current animal drug approval process in the United States, the international perspective, and FDA's proposed procedures to evaluate the human health impact of the antimicrobial effects associated with animal drugs intended for use in food-producing animals. The primary public health goal of the improved regulatory paradigm is to ensure that significant human antimicrobial therapies are not lost due to use of antimicrobials in food animals.

Toma E. et al. *Antimicrobial activity of fusidic acid and disk diffusion susceptibility testing criteria for gram-positive cocci.* J Clin Microbiol. 1995; 33(7) : 1712-5.p Abstract: The in vitro activity of fusidic acid was assessed and was compared with those of cloxacillin, cefamandole, vancomycin, teicoplanin, ofloxacin, ciprofloxacin, pefloxacin, and fleroxacin against 500 gram-positive cocci: 151 Staphylococcus aureus, 197 coagulase-negative staphylococci, and 152 Enterococcus faecalis strains. All clinical isolates were concomitantly tested by disk diffusion and agar dilution procedures as outlined by the National Committee for Clinical Laboratory Standards. The results with fusidic acid were further analyzed by regression line and error rate-bounded methods. With control American Type Culture Collection organisms, the values were within the limits of the National Committee for Clinical Laboratory Standards or published limits. The incidence of resistance to fusidic acid was 0.7% for S. aureus, 2.5% for coagulase-negative staphylococci, and 99.3% for E. faecalis. The correlation coefficient between the results of disk diffusion and agar dilution tests with fusidic acid was 0.90. Current interpretive criteria for susceptibility to fusidic acid (i.e., MIC of < 2 micrograms/ml and inhibitory zone of 20 mm) gave 1% false susceptibility (all strains being E. faecalis). This error rate is practically eliminated if a zone diameter of 21 mm is considered the breakpoint for susceptibility.

Tomiyama M. *[The effect of cefaclor and cefixime on nasopharyngeal pathogens in children].* Nippon Jibiinkoka Gakkai Kaiho. 1995; 98(4) : 659-68.p Abstract: Changes in nasopharyngeal flora were investigated in children with acute otitis media and with acute exacerbations of chronic sinusitis in whom antibiotic therapy of relatively long duration was required until substantial improvement in clinical findings was achieved. 1. The antibiotics used were two cephalosporins, i.e., cefaclor (CCL) and cefixime (CFIX), administered to 18 patients each for 1 week and to 26 and 20 patients, respectively, for 2 weeks. Bacteriologic examination of the nasopharyngeal mucosa was performed at the first visit and at 1 week in those who underwent antibiotic therapy for 1 week, and at the first visit and at 1 and 2 weeks in those treated with antibiotics for 2 weeks. 2. The elimination rates for the infecting microorganisms in the patients in the CCL-treated group were 30% for Haemophilus influenzae, 83% for Staphylococcus aureus, 100% for Streptococcus pyogenes and 100% for Streptococcus pneumoniae at 1 week, and 18% for H. influenzae, 100% for S. aureus and 100% for S. pyogenes at 2 weeks of antibiotic therapy. Replacement of S. aureus and S. pyogenes by H. influenzae was observed. 3. The elimination rates for infecting bacteria in the patients in the CFIX-treated groups were 61% for H. influenzae, 50% for S. aureus, 75% for S. pyogenes, 80% for S. pneumoniae and 100% for Moraxella catarrhalis at 1 week, and 72% for H. influenzae, 0% for S. aureus, 100% for S. pyogenes, and 0% for S. pneumoniae at 2 weeks of antibiotic therapy. The elimination rate for H. influenzae at 2 weeks was significantly higher than the corresponding value for the CCL-treated group. Replacement of H.

influenzae by S. aureus and S. pneumoniae and of S. pyogenes by S. aureus was detected. 4. There was one patient with acute otitis media in the CFIX-treated group in whom a clinical relapse occurred due to H. influenzae persisters in the nasopharynx. Thus the diagnosis in this patient was so-called "recurrent otitis media". 5. H. influenzae tended to persist after exposure to therapeutically adequate concentrations of CCL, as did S. aureus and S. pneumoniae following treatment with CFIX. Thus, it would seem that ample heed must be given to persistence, particularly of H. influenzae and S. pneumoniae, the most common causative agents of acute otitis media in childhood. 6. A significant rise in the MICs of the cephalosporins was observed in 4 of 43 patients in whom the same type of organism was isolated from the nasopharynx at weekly intervals during antibiotic therapy. (ABSTRACT TRUNCATED AT 400 WORDS).

Tomizawa I. et al. *[Clinical study of prulifloxacin on infectious enteritis. Japan Research Committee of Prulifloxacin, Research Group on Infectious Enteritis].* Kansenshogaku Zasshi. 1996; 70(7) : 727-45.p Abstract: Prulifloxacin (PUFX), a new quinolone antimicrobial agent, was administered to a total of 122 patients and carriers to investigate its clinical efficacy, safety and usefulness in infectious enteritis (bacillary dysentery, enteritis caused by Salmonella spp. and enteropathogenic E. coli, cholera and so on). In addition, the minimum inhibitory concentration (MIC) of UFX (active compound) was determined against each clinical isolate, and compared with that of ciprofloxacin (CPFX), ofloxacin (OFLX), tosufloxacin (TFLX) and nalidixic acid (NA). The correlation between the concentration of UFX in feces and the change of the fecal microflora were also investigated when PUFX was administered to the patients with acute infectious enteritis. A daily dose of 400 mg of PUFX was administered orally in two divided doses (morning and evening) for 5 days, with the exception of 7 days administration against salmonella enteritis and 3 days administration against cholera. 84 cases were adapted for evaluating the usefulness. The clinical efficacy was 100% in all the enteritis except salmonella enteritis, in which it was 88.9% (8/9 cases). On the bacteriological efficacy, the elimination rate was 100% in all isolates except Salmonella spp., in which it was 75.0% (12/16 cases). As for the adverse effect, uriticaria in moderate degree was observed in 1 (0.9%) of 109 cases. Abnormal changes in laboratory findings were seen in 3 (3.0%) of 100 cases, consisting of 1 with eosinophilia and 2 with elevated S-GPT, although they were all slight in degree. The usefulness rate was 65.5% (55/84 cases) for "very useful" and 95.2% (80/84 cases) for "very useful" and "useful". MIC90 of UFX against Shigella spp., Salmonella spp., E. coli and V. cholerae, was 0.025, 0.05, 0.025 and 0.05 microgram/ml, respectively. These values were the same as those of CPFX and TFLX, and superior to OFLX and NA. UFX concentrations in feces followed by administration of PUFX in 3 cases with acute infectious enteritis were higher than that of MIC90 of UFX against Shigella spp., Salmonella spp., E. coli and V. cholerae. The changes of the fecal microflora, which influence the efficacy and safety of PUFX, were not observed.

Tompkins D.S. et al. *A study of infectious intestinal disease in England: microbiological findings in cases and controls.* Commun Dis Public Health. 1999; 2(2) : 108-13.p Abstract: A study was undertaken to identify the microorganisms and toxins in stool specimens associated with infectious intestinal disease (IID) among cases in the community and presenting to general practitioners (GPs) and in asymptomatic controls. Population based cohorts were recruited from practice lists in 70 practices and followed for 26 weeks (cohort component). Seven hundred and sixty-one cases of IID identified from the cohorts, 2893 cases who presented to GPs in 34 of the practices (GP component), and age/sex matched control subjects (555 and 2264, respectively) submitted stool specimens by post for comprehensive microbiological examination. Campylobacter spp (12.2% of stools tested), rotavirus group A (7.7%), and small round structured virus (SRSV) (6.5%) were the organisms most commonly detected in the GP component. SRSV was identified in 7.0% of cases in the community cohort. No target microorganisms or toxins were identified in 45.1% and 63.1% of cases in the two components. Aeromonas spp, Yersinia spp, and some enterovirulent groups of Escherichia coli were detected as frequently in controls as in cases. The higher frequency of detection of campylobacter, salmonella, and rotavirus among cases who presented to GPs than among those in the community suggests that those pathogens cause more severe illness. No enteropathogens were detected from a large proportion of cases although comprehensive standard methods were used to seek them.

Tong D.C. et al. *Antibiotic prophylaxis in dentistry: a review and practice recommendations.* J Am Dent Assoc. 2000; 131(3) : 366-74.p Abstract: BACKGROUND: The American Heart Association, or AHA, and the American Dental Association recently changed their recommended protocols for antibiotic prophylaxis against bacterial endocarditis. A new recommendation also has been issued by the ADA and the American Academy of Orthopaedic Surgeons, or AAOS, against routine antibiotic prophylaxis in patients with prosthetic joint replacements. These changes reflect increasing scientific evidence and professional experience in opposition to widespread use of antibiotic prophylaxis in these specific situations and others faced in dentistry. METHODS: The authors reviewed the medical and dental literature for scientific evidence regarding the use of antibiotics to prevent local and systemic infections associated with dental treatment. Situations commonly considered by dentists for potential use of prophylactic antibiotics were reviewed to determine current evidence with regard to use of antimicrobial agents. This included prevention of distant spread of oral organisms to susceptible sites elsewhere in the body and the reduction of local infections associated with oral procedures. RESULTS: There are relatively few situations in which antibiotic prophylaxis is indicated. Aside from the clearly defined instances of endocarditis and late prosthetic joint infections, there is no consensus among experts on the need for prophylaxis. There is wide variation in recommended protocols, but little scientific basis for the recommendations. The emerging trend seems to be to avoid the prophylactic use of antibiotics in conjunction with dental treatment unless there is a clear indication. CONCLUSIONS: Aside from the specific situations described, there is little or no scientific basis for the use of antibiotic prophylaxis in dentistry. The risk of inappropriate used of antibiotics and widespread antibiotic resistance appear to be far more important than any possible perceived benefit. CLINICAL IMPLICATIONS: Dentists are wise to use antibiotic prophylaxis in only those specific situations in which there is a valid scientific basis for it. Whenever possible, dentists should follow the standard protocols recommended by the ADA, AHA or AAOS.

Topeli A. et al. *Risk factors influencing clinical outcome in Staphylococcus aureus bacteraemia in a Turkish University Hospital.* Int J Antimicrob Agents. 2000; 14(1) : 57-63.p Abstract: A total of 101 episodes of Staphylococcus aureus bacteraemia were evaluated for the factors influencing prognosis. The overall episode mortality rate and the mortality rate due to bacteraemia were 43.6 and 21.8%, respectively. Episodes with methicillin-resistant S. aureus (MRSA) bacteraemia had a significantly higher overall mortality rate (58.7 vs. 30.9%, $P<0.01$) and mortality rate due to bacteraemia (32.6 vs. 12.7%, $P=0.02$) when compared with episodes caused by methicillin-sensitive S. aureus (MSSA). The multivariate analysis revealed that the underlying disease, presence of infective endocarditis, septic shock and central intravascular catheter and methicillin resistance of S. aureus were the five independent risk factors associated with a higher mortality rate.

Torell E. et al. *Near absence of vancomycin-resistant enterococci but high carriage rates of quinolone-resistant ampicillin-resistant enterococci among hospitalized patients and nonhospitalized individuals in Sweden.* J Clin Microbiol. 1999; 37(11) : 3509-13.p Abstract: Rates of colonization with enterococci with acquired resistance to vancomycin (vancomycin-resistant enterococci [VRE]) and ampicillin (ampicillin-resistant enterococci [ARE]) were determined by using fecal samples from 670 nonhospitalized individuals and 841 patients in 27 major

hospitals. Of the hospitalized patients, 181 (21.5%) were carriers of ARE and 9 (1.1%) were carriers of VRE. In univariate analyses, length of hospital stay (odds ratio [OR], 4.6; 95% confidence interval [CI], 2.5 to 8.9) and antimicrobial therapy (OR, 4.7; 95% CI, 3.3 to 6.7) were associated with ARE colonization, as were prior treatment with penicillins (OR, 3.1; 95% CI, 1.8 to 5. 5), cephalosporins (OR, 2.9; 95% CI, 1.7 to 5.0), or quinolones (OR, 2.7; 95% CI, 1.5 to 4.7). In logistic regression analysis, antimicrobial therapy for at least 5 days was independently associated with ARE carriage (adjusted OR, 3.8; 95% CI, 2.6 to 5.4). Over 90% of the ARE isolates were fluoroquinolone resistant, whereas 14% of the ampicillin-susceptible Enterococcus faecium isolates were fluoroquinolone resistant. ARE carriage rates correlated with the use of fluoroquinolones (P = 0.04) but not with the use of ampicillin (P = 0.68) or cephalosporins (P = 0.40). All nine VRE isolates were E. faecium vanB and were found in one hospital. Seven of these isolates were related according to their types as determined by pulsed-field gel electrophoresis. Among the nonhospitalized individuals, the ARE carriage rate was lower (6%; P < 0.05), and only one person, who had recently returned from Africa, harbored VRE (E. faecium vanA). The absence of VRE colonization in nonhospitalized individuals reflects an epidemiological situation in Sweden radically different from that in countries in continental Europe where glycopeptides have been widely used for nonmedical purposes.

Torres A. et al. *Community-acquired pneumonia in chronic obstructive pulmonary disease: a Spanish multicenter study.* Am J Respir Crit Care Med. 1996; 154(5) : 1456-61.p Abstract: Community-acquired pneumonia (CAP) is an infectious illness that frequently motivates hospital admission when comorbid conditions are present. However, the epidemiology of CAP in relation to the underlying disease of the patients is not well known. We performed a prospective multicenter study with the aim of assessing the clinical characteristics, etiology, and outcome of chronic obstructive pulmonary disease (COPD) patients with CAP. Between October 1992 and December 1994 we studied 124 COPD patients (mean FEV1 40 +/- 11% of predicted, mean FVC/FEV1 49 +/- 10) admitted because of CAP to one of the participating centers. An attempt to obtain an etiologic diagnosis was performed by means of blood cultures (n = 123), sputum cultures (n = 97), pleural fluid cultures (n = 17), protected specimen brush samples (n = 41), percutaneous transthoracic needle aspiration (n = 41), and serology (n = 106). Etiologic diagnosis was achieved in 80 (64%) of cases, however, diagnosis based upon valid techniques was only possible in 73 (59%) cases. The main causal microorganisms were the following: Streptococcus pneumoniae in 32 (43%), Chlamydia pneumoniae in 9 (12%), Hemophilus influenzae in 7 (9%), Legionella pneumophila in 7 (9%), Streptococcus viridans in 3 (4%), Coxiella burnetii in 3 (4%), Mycoplasma pneumoniae in 2 (3%), Nocordia asteroides 2, Aspergillus ssp. 1, and others 10. In three of these cases the etiology was polymicrobial. Bacteremia was present in 19 (15%) cases; S. pneumoniae was the most frequent isolate (13 cases). Antibiotic treatment was modified in 22 cases due to etiologic findings, and in 9 due to therapeutic failure. Ten patients died (8%), and 22 needed mechanical ventilation, the mortality rate in the latter population being 23%. Total or partial resistance of S. pneumoniae to penicillin was observed in 10 of 32 (31%) isolations, and to erythromycin in 2 (6%). The results of this study are important for the standardization of empiric antibiotic strategies in COPD patients with pneumonia.

Torres A.J. et al. *Cefminox versus metronidazole plus gentamicin intra-abdominal infections: a prospective randomized controlled clinical trial*. Infection. 2000; 28(5) : 318-22.p Abstract: BACKGROUND: The aim of this prospective study was to compare the safety and efficacy of a new cephamycin, cefminox 2 g/12 h, to those of the usual regimen combining metronidazole 500 mg/8 h and gentamicin 80 mg/8 h (M+G). PATIENTS AND METHODS: 160 patients with clinically proven intra-abdominal infection were prospectively included in an open parallel randomized comparative multicenter trial. Antibiotics were started preoperatively and discontinued after clinical and laboratory evidence of resolution of the infection. Serum and peritoneal fluid levels and serum bactericidal activities were also studied. RESULTS: 150 patients were clinically evaluable. There was one failure in the cefminox group and three in the M+G group (not significant, RR: 1.07, 95% CI: 1-1.15). No differences were found in the number of wound infections, length of stay or duration of antibiotic therapy. Adverse effects were reported in 11 cases, all of them mild to moderate. Escherichia coli and Bacteroides fragilis were the most frequently found microorganisms. CONCLUSION: Cefminox is as effective and as safe as M+G in the treatment of intra-abdominal infections.

Torres A. et al. *Infecciones invasivas por Haemophilus influenzae tipo b (Hib) en Tucumán-Argentina / Invasive infections caused by haemophilus influenzae type b in children in Tucumáan-Argentina, before vaccination*. Arch. argent. pediatr. 1995; 93(4) : 238-44.p Abstract: Objetivo: Investigar los "aspectos epidemiológicos" de la patología invasiva Hib (PI Hib) con especial referencia a la meningitis, en niños menores de 5 años. Categorizar el problema dentro de la salud pública en Tucumán. Material y métodos: El estudio se llevó a cabo desde enero de 1985 a diciembre de 1992 en el Hospital del Niño Jesús. Se incluyó a todo paciente con sospecha clínica de PI Hib y confirmada por cultivo o serología obtenida de materiales representativos. Resultados: Se registraron 264 casos de PI Hib: 218 (82,5 por ciento) meningitis y 46 (17,5 por ciento) formas extrameníngeas. El 89 por ciento de las meningitis tuvieron foco único. Las formas extrameníngeas se distribuyeron entre bacteriemias, supuración pleuropulmonar, neumonías, celulitis, artritis y otras. La meningitis Hib (M Hib) es endémica en Tucumán, con un aumento en los meses de invierno. El Hib representa el 70 por ciento de las meningitis extrahospitalarias bacterianas. La incidencia anual promedio, en niños menores de 5 años, de la PI Hib fue 20,4/100.000 y de M Hib 16,7/100.000, en menores de 1 año la incidencia de M Hib fue 63/100.000; el 77,5 por ciento de las meningitis suceden a esta edad. La tasa de letalidad: 20,1 por ciento. La resistencia a ampicilina osciló entre 0-17,4 por ciento y la de ampicilina-cloranfenicol entre 2,7-8,7 por ciento. Conclusiones: Al cabo de ocho años de estudio la M Hib mostró en Tucumán un sostenido aumento; es la primera causa de mortalidad dentro de las enfermedades prevenibles por vacunas en niños menores de 2 años y la octava causa de mortalidad infantil (AU).

Torres M.J. et al. *Use of real-time PCR and fluorimetry for rapid detection of rifampin and isoniazid resistance-associated mutations in mycobacterium tuberculosis.* J Clin Microbiol. 2000; 38(9) : 3194-9.p Abstract: Very fast amplification of DNA in small volumes can be continuously monitored with a rapid cycler that incorporates fluorimetric detection. Primers were designed to amplify a 157-bp fragment of the rpoB gene spanning codons 526 and 531 and a 209-bp fragment of the katG gene spanning codon 315 of Mycobacterium tuberculosis. Most mutations associated with resistance to rifampin (RMP) and isoniazid (INH) in clinical isolates occur in these codons. Two pairs of hybridization probes were synthesized; one in each pair was 3' labeled with fluorescein and hybridized upstream of the codon with the mutation; the other two probes were 5' labeled with LightCycler-Red 640. Each pair of probes recognized adjacent sequences in the amplicon. After DNA amplification was finished by using a LightCycler, the temperature at which the Red 640 probe melted from the product was determined in a 3-min melt program. Twenty M. tuberculosis clinical isolates susceptible to streptomycin, INH, RMP, and ethambutol and 36 antibiotic-resistant clinical M. tuberculosis isolates (16 resistant to RMP, 16 to INH, and 4 to both antimicrobial agents) were amplified, and the presence of mutations was determined using single-strand conformation polymorphism analysis, the LiQor automated sequencer, and the LightCycler system. Concordant results were obtained in all cases. Within 30 min, the LightCycler method correctly genotyped all the strains without the need of any post-PCR sample manipulation. Overall, this pilot

study demonstrated that real-time PCR coupled to fluorescence detection is the fastest available method for the detection of RMP and INH resistance-associated mutations in M. tuberculosis clinical isolates.

Torsova V. et al. *Evaluation of the effects of a new Water-Jel system on specific bacterial and yeast strains in laboratory conditions.* Burns. 1995; 21(1) : 47-9.p Abstract: In three previous studies the Water-Jel (WJ) system was found to protect burn wounds from microbial contamination, to have excellent analgesic and cooling effects when used as a first-aid dressing and to be bactericidal to 15 microorganisms including yeasts tested from the Ostrava Burn Unit. Now a new WJ system has been introduced without povidone iodine. An extensive bacteriological laboratory evaluation of the new WJ system showed quite clearly its excellent antimicrobial and antimycotic properties for 13 of the 15 strains of microorganisms tested, the only exceptions being Clostridium difficile and partially Streptococcus faecalis. In a preliminary study, the new WJ system was used for 24-48 h in 74 burned patients with superficial partial and deep partial skin thickness burns. In 89 per cent of them there were no signs of infection on their burn wound after 48 h. The new WJ system was well tolerated and no allergic reactions appeared.

Tortora J.C. et al. *Nosocomial occurrence of enterotoxigenic multiresistant Staphylococcus strains in Rio de Janeiro.* Rev Latinoam Microbiol. 1996; 38(1) : 1-6.p Abstract: We studied 46 Staphylococcus aureus strains with three patterns of antimicrobial resistance (MARSA, MRSA and MSSA) obtained from inpatients of a large community hospital in Rio de Janeiro, Brazil. The strains showed a single biochemical pattern. On the contrary, remarkable phage-typing differences could be observed. Thirteen strains were associated to phagic group III and the remainder could not be typed even though most of them had shown a weak sensitivity to phage 54. Fourteen strains synthesized one or more enterotoxins. Enterotoxin D was synthesized more often. Neither was EEB produced nor TSSF-1. The results suggested the widespreading of different staphylococci strains in that hospital. There was strong evidence that some cases of nosocomial infections leading to death have been caused by the same S. aureus strain recovered from some inpatients in the intensive care unit.

Tossi A. et al. *Amphipathic, alpha-helical antimicrobial peptides.* Biopolymers. 2000; 55(1) : 4-30.p Abstract: Gene-encoded antimicrobial peptides are an important component of host defense in animals ranging from insects to mammals. They do not target specific molecular receptors on the microbial surface, but rather assume amphipathic structures that allow them to interact directly with microbial membranes, which they can rapidly permeabilize. They are thus perceived to be one promising solution to the growing problem of microbial resistance to conventional antibiotics. A particularly abundant and widespread class of antimicrobial peptides are those with amphipathic, alpha-helical domains. Due to their relatively small size and synthetic accessibility, these peptides have been extensively studied and have generated a substantial amount of structure-activity relationship (SAR) data. In this review, alpha-helical antimicrobial peptides are considered from the point of view of six interrelated structural and physicochemical parameters that modulate their activity and specificity: sequence, size, structuring, charge, amphipathicity, and hydrophobicity. It begins by providing an overview of how these vary in peptides from different natural sources. It then analyzes how they relate to the currently accepted model for the mode of action of alpha-helical peptides, and discusses what the numerous SAR studies that have been carried out on these compounds and their analogues can tell us. A comparative analysis of the many alpha-helical, antimicrobial peptide sequences that are now available then provides further information on how these parameters are distributed and interrelated. Finally, the systematic variation of parameters in short model peptides is used to throw light on their role in antimicrobial potency and specificity. The review concludes with some considerations on the potentials and limitations for the development of alpha-helical, antimicrobial peptides as antiinfective agents. Copyright 2000 John Wiley & Sons, Inc.

Tousovska K. et al. *[Thrombosis in childhood—etiologic role of congenital thrombophilic conditions].* Cas Lek Cesk. 2000; 139(5) : 137-42.p Abstract: BACKGROUND: Increasing frequency of thrombosis in podiatry brings about high morbidity and mortality. From published sets of clinical cases with thromboembolic complications can be concluded, that contrary to adults, origin of thrombosis in children is more frequently based on congenital thrombophilic states. The main of the work is: 1. To identify prevalence of the congenital thrombophilic states in the set of patients with venous and arterial thrombosis. 2. Formulate recommendations for the laboratory investigation. 3. Evaluate results of the thrombosis treatment in our set of patients. METHODS AND RESULTS: Set of 24 patients of the average age 6.7 years at the time of thrombosis (16 time venous, 8 times arterial) was retrospectively investigated for the presence of the factor V-Leiden mutation, prothrombine 20210A mutation, deficiency of C and S protein, and antithrombin III. Presence of acquired risk factors was also evaluated. Congenital thrombophilic state was identified in 5 patients (31.2%) with venous thrombosis and in 1 patient (12.5%) with arterial thrombosis. Mutation of the factor V-Leiden was found most frequently. It was identified at 3 patients (18.7%) with venous thrombosis and 1 patient (12.5%) with arterial thrombosis. The central venous catheter was the most frequent acquired risk of thrombosis (50%). In 1 patient with venous thrombosis and in 4 patients with arterial thrombosis no acquired or congenital risks of thrombosis were identified. Results of treatment confirmed beneficial effects of heparinisation and subsequent wafarinszation for the period of increased risk of thrombosis. Systemic thrombolysis was done 3 times without complications. CONCLUSION: Congenital thrombophilic states play significant role in the manifestations of thromboses in children. In majority of children with manifesting thrombosis at least one risk factor was identified. Cerebral infarcts in infants remain largely unrevealed.

Townes J.M. et al. *Etiology of bloody diarrhea in Bolivian children: implications for empiric therapy. Bolivian Dysentery Study Group.* J Infect Dis. 1997; 175(6) : 1527-30.p Abstract: In Bolivia, few data are available to guide empiric therapy for bloody diarrhea. A study was conducted between December 1994 and April 1995 to identify organisms causing bloody diarrhea in Bolivian children. Rectal swabs from children <5 years old with bloody diarrhea were examined for Salmonella, Shigella, and Campylobacter organisms; fecal specimens were examined for Entamoeba histolytica. A bacterial pathogen was identified in specimens from 55 patients (41%). Shigella organisms were found in 39 specimens (29%); 37 isolates (95%) were resistant to ampicillin, 35 (90%) to trimethoprim-sulfamethoxazole, and 24 (62%) to chloramphenicol, but all were susceptible to nalidixic acid. Only 1 of 133 stool specimens contained E. histolytica trophozoites. Multidrug-resistant Shigella species are a frequent cause of bloody diarrhea in Bolivian children; E. histolytica is uncommon. Clinical predictors described in this study may help identify patients most likely to have Shigella infection. Laboratory surveillance is essential to monitor antimicrobial resistance and guide empiric treatment.

Trafny E.A. *Susceptibility of adherent organisms from Pseudomonas aeruginosa and Staphylococcus aureus strains isolated from burn wounds to antimicrobial agents.* Int J Antimicrob Agents. 1998; 10(3) : 223-8.p Abstract: To assess the bactericidal effects of ciprofloxacin, netilymicin, and polymyxin B on adherent Pseudomonas aeruginosa organisms and also the bactericidal effects of ciprofloxacin, vancomycin and teicoplanin on adherent Staphylococcus aureus cells, a simple endpoint microplate assay, based on the method described by Miyake et al. was used in the present study. As results of the assay, the minimal inhibitory concentration (MICADH) values are taken, which express the susceptibility of the bacterial cells spontaneously released from the surface of adherent microcolonies to antimicrobial agents.

Also, a minimal bactericidal concentration (MBCADH) value was read, which is defined as the lowest antibiotic concentration required to kill the sessile bacterial cells. For twenty P. aeruginosa strains and nineteen S. aureus strains isolated from burn wounds, an enhanced resistance against bactericidal action of the applied antibiotics was observed when bacterial cells were attached to polystyrene surface. The MICADH values were comparable with the conventional MIC values only for ciprofloxacin and netilmicin for P. aeruginosa strains. The MBCADH values exceeded many times the conventional MBC values for the majority of strains. The validity of the assay was estimated in the experiment designed to determine the concentration of ciprofloxacin that should be released topically from the collagen dressing to prevent the biomaterial from microbial colonization and allow the decontamination of the wound.

Trahan L. *Xylitol: a review of its action on mutans streptococci and dental plaque—its clinical significance.* Int Dent J. 1995; 45(1 Suppl 1) : 77-92.p Abstract: Many mechanisms have been proposed to explain the caries preventive effect of xylitol as a total or partial dietary sugar substitute. This article reviews the current knowledge of the effect of xylitol on the microbial population of dental plaque, particularly on mutans streptococci, in the light of an ecological concept of the oral environment and of the potential clinical significance. A noncariogenic commensal plaque flora constitutes the biotic component of a balanced ecosystem compatible with dental health. Dietary sugars, particularly sucrose, and sugar substitutes are abiotic environmental factors that can shift the delicate balance of the ecosystem towards a more or less cariogenic microbiota. Most dietary sugars are fermented by plaque microorganisms, favour the establishment of a cariogenic microflora and contribute to bacterial virulence. The vast majority of plaque bacteria, however, are incapable of fermenting xylitol into cariogenic acid end-products. There is no evidence that the plaque microbiota can adapt to metabolise xylitol or can be enriched with xylitol-metabolising cells even after long exposure to xylitol. Accumulated intracellularly as a non-metabolisable metabolite by mutans streptococci, xylitol inhibits its growth in vitro and reduces the amount of plaque and the number of mutans streptococci in both the plaque and saliva of xylitol consumers. When present in the oral environment xylitol not only prevents a shift of the bacterial community towards a more cariogenic microflora but also selects for a mutants population that was shown to have weakened virulence factors in preliminary in vitro experiments and in rats. Further research is needed to fully understand the clinical importance in the prevention of caries of this xylitol-selected population.

Tran T.S. et al. *Postoperative hospital-acquired infection in Hungvuong Obstetric and Gynaecological Hospital, Vietnam*. J Hosp Infect. 1998; 40(2) : 141-7.p Abstract: A prospective study was conducted following 1364 major operations at the 450-bed Hungvuong Obstetric and Gynaecological Hospital in HoChiMinh City, Vietnam, from 1 May to 30 September 1997 to characterize postoperative hospital-acquired infections. These infections were identified by ward rounds, review of laboratory results and patient follow-up until 30 days after discharge. During the study period, 194 infections were identified, yielding a rate of 14.2 infections per 100 operations. The most common sites were surgical wound and urinary tract, contributing together 95.9% of all hospital-acquired infections. The four most common pathogens were Staphylococcus aureus (29.6%), Escherichia coli (20.4%), Enterococci (16.7%) and Staphylococcus epidermidis (14.8%).

Traore O. et al. *Comparison of in-vivo antibacterial activity of two skin disinfection procedures for insertion of peripheral catheters: povidone iodine versus chlorhexidine.* J Hosp Infect. 2000; 44(2) : 147-50.p Abstract: Skin disinfection is a key step in the prevention of nosocomial infections especially prior to invasive procedures such as the insertion of peripheral catheters. Alcohol-based antiseptics improve bactericidal activity and decrease the time needed for skin disinfection in emergencies. A randomized study was performed in two groups of 22 volunteers to compare the in vivo bactericidal effect of two rapid disinfection procedures using povidone iodine (PVP-I) in scrub formulation followed by alcoholic PVP-I, or chlorhexidine in scrub formulation followed by alcoholic chlorhexidine. Bacteria were recovered using the cylinder scrub method. Comparison of reductions in the aerobic and anaerobic flora from baseline levels to each of the three sampling times (30 sec, 3 min, 2 h) showed no significant difference between the two procedures Log(10)reduction after 30 seconds was around 1.5 for the aerobic flora and 1.1 for the anaerobic flora. After 3 minutes the corresponding values were 2.1 and 1.8, and after 2 hours 2.0 and 1.3. The products were well tolerated in both groups. The two procedures had comparable rapid bactericidal activity in vivo. Copyright 2000 The Hospital Infection Society.

Traub W.H. et al. *Immunobiology of methicillin-resistant Staphylococcus aureus: immune response of rabbits and patients to systemic infection*. Chemotherapy. 1996; 42(2) : 118-32.p Abstract: Teichoic acid (TA) and peptidoglycan (PG) extracted from Staphylococcus aureus strains ATCC 25923 and Lafferty as well as formalinized cells of these two strains and several clinical methicillin-resistant S. aureus (MRSA) isolates were immunogenic for New Zealand White rabbits. Rabbits which had recovered from experimental bacteremia due to MRSA seroconverted, i.e. demonstrated raised titers of antibodies against TA and PG of the S. aureus strain Lafferty and against whole cells (WC) and ultrasound cell lysates (UCL) of MRSA isolates No. 1 and 2 (representative of nosocomial MRSA strain I), as determined with enzyme-linked immunosorbent assays. Furthermore, sera from 2 long-term survivor rabbits recognized four polypeptides (apparent molecular weight = 38.9, 33.9, 30.9, and 28.2 kDa) shared by UCL extracts from MRSA isolates No. 1 and 2, as determined with immunoblots. Neither normal nor immune rabbit sera augmented the bactericidal activity of fresh defibrinated human blood (65% v/v) against selected MRSA isolates and S. aureus strain ATCC 25923. Sera from 12 patients with documented systemic infection due to MRSA outbreak strain I were examined for IgM and IgG antibodies against TA, WC, and UCL antigens. Three patient sera exhibited raised IgM antibodies against TA; 7 of 12 patient sera showed increased IgG anti-TA titers. Only 1 patient had a markedly raised IgM anti-WC titer, whereas 4 and 10 of the patients had increased IgG titers against WC from MRSA isolates No. 1 and 2, respectively. However, all 12 patients had raised IgG titers against UCL from MRSA isolate No.2 versus 4 of 12 patients with elevated IgG titers against UCL from MRSA isolate No.1. Immunoblots with 3 selected patient sera revealed IgG antibodies to be more multifaceted than IgM antibodies. Sera from 11 of the 12 patients contained antimicrobial drug(s); yet only 5 of these 11 sera (used at 10% v/v in broth) killed inocula of MRSA isolate No. 43. None of the 12 patient sera (10% v/v) enhanced the bactericidal activity of human blood against selected MRSA isolates. Neither three commercial intravenously applicable IgG preparations nor an IgG anti-alpha-hemolysin formulation (employed at 10% v/v) augmented the bactericidal activity of fresh defibrinated human blood against selected MRSA isolates comprising MRSA outbreak strain I.

Traub W.H. et al. *Antibiotic susceptibility testing (agar disk diffusion and agar dilution) of clinical isolates of Enterococcus faecalis and E. faecium: comparison of Mueller-Hinton, Iso-Sensitest, and Wilkins-Chalgren agar media.* Chemotherapy. 1998; 44(4) : 217-29.p Abstract: Forty-two isolates of Enterococcus faecalis and 56 isolates of Enterococcus faecium, including 8 vancomycin-resistant strains, were examined for comparative susceptibility to 27 antimicrobial drugs with the agar dilution method, employing Mueller-Hinton (MHA), Iso-Sensitest (ISTA), and Wilkins-Chalgren (WCA) agar. The Bauer-Kirby agar disk diffusion method was used to comparatively test 24 of the agents in parallel. The enterococci yielded better growth on ISTA and WCA. However, WCA completely antagonized co-trimoxazole and, though less, fosfomycin. Importantly, WCA slightly reduced the activities of teicoplanin (minimal inhibitory concentrations, MICs,

raised up to twofold) and vancomycin (MICs raised two- to fourfold) against enterococci and staphylococcal quality control strains. Therefore, WCA was judged unsuitable for susceptibility testing of enterococci. For E. faecalis no discrepancies between agar dilution MICs and inhibition zone diameters were encountered with augmentin, ampicillin, ampicillin-sulbactam, chloramphenicol, mupirocin, oxacillin, teicoplanin, and co-trimoxazole. Overall, MHA yielded fewer very major (category I) and major (category II) discrepancies than ISTA. However, numerous minor (category III), slight (category IV), minimal (category V), and/or negligible (category VI) discrepancies were encountered with ciprofloxacin, doxycycline, erythromycin, fosfomycin, fusidic acid, meropenem, ofloxacin and rifampin. With respect to E. faecium, only cefotaxime, mupirocin, oxacillin, and teicoplanin yielded nondiscrepant results. Several very major (I) and major (II) discrepancies were observed with augmentin, ampicillin, ampicillin-sulbactam, doxycycline, fusidic acid, imipenem, and penicillin G. Minor discrepancies (categories III-VI) were particularly numerous with augmentin, chloramphenicol, ciprofloxacin, doxycycline, and piperacillin. The largest numbers of negligible (VI) discrepancies were noted with fosfomycin, fusidic acid, and ofloxacin. It is recommended to test one cephalosporin (cefuroxime or the like) in parallel for educational purposes and to exclude fosfomycin, fusidic acid, and rifampin from test batteries because of the wide scatter of test results. The large number of minimal (V) discrepancies of ciprofloxacin against E. faecalis, the numerous minor (III) and slight (IV) discrepancies of chloramphenicol against E. faecium, and the not insignificant number of very major (I) and minor (III) discrepancies observed with meropenem against isolates of E. faecalis necessitated proposals for new disk intermediate susceptibility criteria.

Traub W.H. et al. *A cluster of nosocomial cross-infection due to multiple antibiotic-resistant Acinetobacter baumannii: Characterization of the strain and antibiotic susceptibility studies.* Chemotherapy. 1999; 45(5) : 349-59.p Abstract: A multiple antibiotic-resistant (MAR) strain of Acinetobacter baumannii caused nosocomial cross-infection among 3 patients of a surgical intensive care unit. The isolates were of identical biochemical profile (77776 S-U-) and serotype (serovar 36) and identical in terms of pulsed-field gel electrophoresis macrorestriction (SmaI, ApaI) analysis. This MAR strain was susceptible only to netilmicin, tobramycin, imipenem, meropenem, polymyxin B, and trovafloxacin. The minimal bactericidal concentrations of imipenem and meropenem were markedly higher than the corresponding minimal inhibitory concentrations against this strain. Combined fresh defibrinated human blood (65 vol%) and antimicrobial drug assays yielded the following results: polymyxin was the most rapidly bactericidally effective antibiotic in the presence of blood and in broth. Tobramycin and netilmicin were efficacious in 65 vol% blood. Imipenem was slightly more effective than meropenem in broth, whereas both carbapenems sterilized blood-containing assay tube contents. Trovafloxacin failed to achieve bactericidal activity (to 99.9% kill) in the presence of blood, presumably because this strain was resistant to ciprofloxacin and borderline susceptible to ofloxacin. Trovafloxacin combined with either imipenem or meropenem yielded an indifferent effect. However, the combination of trovafloxacin (2 microg/ml) plus tobramycin (1 microg/ml) achieved sterilization of tube contents in the presence of blood within 4 h after exposure and in broth following extended (overnight) incubation. This MAR strain of A. baumannii was high-level resistant to rifampin; thus the combination of polymyxin B plus rifampin proved indifferent.

Traub W.H. et al. *Antibiotic susceptibility of alpha- and nonhemolytic streptococci from patients and healthy adults to 24 antimicrobial drugs.* Chemotherapy. 1997; 43(2) : 123-31.p Abstract: A total of 278 alpha- and nonhemolytic streptococcal isolates (patients, n = 116; healthy adults, n = 162) were examined for susceptibility to 23 and 24 antimicrobial drugs with the Bauer-Kirby agar disk diffusion and the agar dilution method, respectively. Wilkins-Chalgren medium compared favorably with sheep blood Mueller-Hinton agar, the reference medium, for 58 representative streptococcal isolates. In terms of minimal inhibitory concentrations (MICs), all 278 isolates were susceptible to teicoplanin and vancomycin. None of the isolates revealed high-level gentamicin resistance. All isolates were resistant to fusidic acid. Twelve Streptococcus mitis isolates, all from patients, were resistant to penicillin G and variably to other antibiotics. Oxacillin disks failed to predict penicillin G susceptibility. In general, patient isolates were more frequently resistant to beta-lactam antibiotics and fluoroquinolones; conversely, isolates from healthy carriers were slightly more resistant to macrolide antibiotics. Specifically, susceptibility rates were: penicillin G 79.1%, oxacillin 87.8%, ampicillin 66.9%, piperacillin 98.2%, cefoxitin 76.6%, cefuroxime 96.8%, cefotaxime 98.6%, ceftriaxone 98.6%, cefepime 98.6%, impipenem 98.2%, ciprofloxacin 59.7%, ofloxacin 89.2%, doxycycline 65.8%, tetracycline 56.8%, clindamycin 87.8%, erythromycin 59%, clarithromycin 74.9%, chloramphenicol 98.9%, cotrimoxazole 97.9%, rifampin 97.5%, and fosfomycin 2.2%. On the basis of numerous minor discrepancies between disk diffusion and agar dilution test results for certain antibiotics, it is proposed that the current NCCLS inhibition zone (diameter, mm) criteria indicative of intermediate susceptibility of alpha- and nonhemolytic streptococci be changed for the following antimicrobial drugs: ampicillin = I = 22-27 mm; ciprofloxacin = I = 16-18 mm; clindamycin = I = 15-18 mm; doxycycline = I = 17-19 mm; tetracycline = I = 17-19 mm; erythromycin = I = 14-19 mm, and cotrimoxazole = I = 11-13 mm. It is recommended to exclude both cefoxitin and doxycycline (substitute = tetracycline) disks from test batteries for non-group A, B beta-hemolytic and alpha-/nonhemolytic streptococcal isolates.

Traub W.H. et al. *Antibiotic susceptibility of clinical isolates of Streptococcus pneumoniae.* Chemotherapy. 1996; 42(4) : 240-7.p Abstract: Ninety-three representative, recent clinical isolates of Streptococcus pneumoniae were examined for susceptibility to 9 antimicrobial drugs utilizing Mueller-Hinton agar (MHA) enriched with sheep blood and a hypercapnic atmosphere of incubation. One isolate was resistant to penicillin G (minimum inhibitory concentration, MIC = 2 micrograms/ml) and 6 isolates were of intermediate susceptibility to penicillin G (MICs = 0.125-0.25 microgram/ml). The penicillin-G-resistant isolate was also resistant to cefuroxime (MIC = 4 micrograms/ml) and of intermediate susceptibility to cefotaxime (MIC = 1 microgram/ml). This isolate was resistant to chloramphenicol (MIC = 16 micrograms/ml) as well. All 93 isolates were susceptible to teicoplanin and vancomycin. Two isolates each were resistant (MICs = 16 micrograms/ml) or moderately susceptible (MICs = 8 micrograms/ml) to chloramphenicol. Eight isolates were resistant to doxycycline (MICs > or = 8 micrograms/ml), whereas 2 isolates were of intermediate susceptibility to this antibiotic (MICs = 4 micrograms/ml). Three isolates were resistant to erythromycin (MICs > or = 4 micrograms/ml), and 2 isolates showed reduced susceptibility to erythromycin (MICs = 2 micrograms/ml). Chocolatized MHA antagonized the activity of teicoplanin and vancomycin against pneumococcal isolates. Haemophilus test and Wilkins-Chalgren media failed to support optimal growth of all pneumococcal isolates.

Traub W.H. et al. *Comparative susceptibility of clinical group A, B, C, F, and G beta-hemolytic streptococcal isolates to 24 antimicrobial drugs.* Chemotherapy. 1997; 43(1) : 10-20.p Abstract: A total of 312 clinical beta-hemolytic streptococcal isolates (Streptococcus pyogenes, group A = 63; Streptococcus agalactiae, group B = 145; group C = 50; group F = 27; group G = 27) were examined for susceptibility to 23 and 24 antimicrobial drugs with the Bauer-Kirby agar disk diffusion and the agar dilution method, respectively. Sheep blood Mueller-Hinton agar served as the reference medium. Wilkins-Chalgren agar supported optimal growth of group A and B, but not of all group C, F, and G streptococci. The group A streptococci were susceptible to all beta-lactam antibiotics, clindamycin, chloramphenicol, rifampin, teicoplanin, and vancomycin, but resist-

ant to cotrimoxazole, fusidic acid, and, except for 2 strains, to fosfomycin. Resistance (R)/intermediate susceptibility (I) rates (R/I%) to ciprofloxacin (0/2%), ofloxacin (1/2%), erythromycin (1.6/0%), and clarithromycin (0/1%) were low. Higher resistance rates were noted with tetracyclines (doxycycline 23.8/15.9%; tetracycline 39.7/3.2%). Among the group B streptococcal isolates, one strain was resistant against oxacillin and of intermediate susceptibility to penicillin G and cefoxitin. All isolates were susceptible to teicoplanin and rifampin. Conversely, all group B isolates were resistant to cotrimoxazole and fusidic acid; 69% and 51% of these isolates were susceptible to fosfomycin and rifampin, respectively. R/I rates of the group B streptococcal isolates were low for ciprofloxacin and ofloxacin (0/0.7%), clindamycin (0.7/0%), erythromycin (1.4/3.5%), clarithromycin (1.4/0%), and chloramphenicol (0.7/0%). Resistance to tetracyclines was significant (doxycycline: 72.4/2.1%; tetracycline; 74.5/1.4%). Among the non-A, non-B beta-hemolytic streptococci, 2 group C strains were resistant to oxacillin and showed intermediate susceptibility to penicillin G. All isolates were susceptible to third and fourth-generation cephalosporins, imipenem, chloramphenicol, rifampin, teicoplanin, and vancomycin. R/I rates to the other antimicrobial drugs were: ciprofloxacin (3.9/1.9%), ofloxacin (2.9/1.9%), clindamycin (2.9/1%), erythromycin (5.8/0%), clarithromycin (3.8/2.9%), and cotrimoxazole (16.4/3.9%). Resistance against tetracyclines was more frequent (doxycycline: 18.3/2.9%; tetracycline: 20.2/6.7%). On the basis of various minor discrepancies between MIC and disk diffusion test results, it is proposed that the current NCCLS inhibition zone (diameter, mm) criteria indicative of intermediate susceptibility of beta-hemolytic streptococci be changed for the following antimicrobial drugs: ampicillin: 22-27 mm (only for group A and B beta-hemolytic streptococci); ciprofloxacin: 16-18 mm; clindamycin: 15-18 mm; doxycycline: 17-19 mm; tetracycline: 17-19 mm, and erythromycin: 14-19 mm.

Traub W.H. et al. *Stenotrophomonas (Xanthomonas) maltophilia: in vitro susceptibility to selected antimicrobial drugs, single and combined, with and without defibrinated human blood.* Chemotherapy. 1998; 44(5) : 293-304.p Abstract: Sixteen selected isolates of Stenotrophomonas maltophilia varied in susceptibility to the combined phagocytic/serum bactericidal activity of fresh defibrinated human blood (65 vol%). Four representative isolates (X1, X11, X25, and X50), which differed in susceptibility to cefepime, ceftazidime, rifampin, and timentin, were subjected to checkerboard microtiter broth dilution tests involving combinations of cefepime plus timentin, ceftazidime plus ofloxacin, cotrimoxazole plus timentin, rifampin plus polymyxin B, and rifampin plus polymyxin B nonapeptide; all combinations yielded additive or synergistic effects against all four strains. Unexpectedly, the combination of cefepime plus timentin was bactericidally active against the two cefepime-resistant isolates. This finding was substantiated by blood/broth plus combined antimicrobial drug assays. Cefepime plus timentin effectively killed all four test strains. Ofloxacin combined with ceftazidime was bactericidally active against the test strains, including two isolates (X11, X50) with intermediate ofloxacin sensitivity. Cotrimoxazole plus timentin in blood, but not in broth, was bactericidal for the timentin-resistant isolate X25. As expected, various triple combinations of chemotherapeutic agents in blood and broth revealed polymyxin B plus rifampin, regardless of the third combination partner, to exert bactericidal activity against all test strains. Similarly, rifampin combined with ofloxacin and ceftazidime was bactericidally active in blood and broth. The observation that timentin combined with cefepime was effective against cefepime-resistant strains of S. maltophilia might prove of clinical relevance with regard to chemotherapy of nosocomial infections due to multiple-antibiotic resistant strains of this opportunistic pathogen.

Traub W.H. et al. *Nosocomial outbreak of cross-infection due to multiple-antibiotic-resistant Klebsiella pneumoniae: characterization of the strain and antibiotic susceptibility studies.* Chemotherapy. 2000; 46(1) : 1-14.p Abstract: A multiple-antibiotic-resistant (MAR) strain of Klebsiella pneumoniae was introduced into a pediatric ward and subsequently colonized neonates of two wards with several cases of systemic infection. This strain produced an extended-spectrum beta-lactamase and was resistant to cefotaxime, ceftazidime, and, among others, all aminoglycosides including amikacin. The majority of representative isolates examined with macrorestriction analysis of genomic DNA (pulsed-field gel electrophoresis) were identical. The strain was susceptible to the innate antibacterial systems operative in fresh defibrinated blood from two adults. Combined human blood/antimicrobial drug assays documented the in vitro bactericidal activity of carbapenems (meropenem was slightly more effective than imipenem), fluoroquinolones (ciprofloxacin and trovafloxacin), and polymyxin B against this MAR strain of K. pneumoniae. Copyright 2000 S. Karger AG, Basel.

Travis S.M. et al. *Bactericidal activity of mammalian cathelicidin-derived peptides.* Infect Immun. 2000; 68(5) : 2748-55.p Abstract: Endogenous antimicrobial peptides of the cathelicidin family contribute to innate immunity. The emergence of widespread antibiotic resistance in many commonly encountered bacteria requires the search for new bactericidal agents with therapeutic potential. Solid-phase synthesis was employed to prepare linear antimicrobial peptides found in cathelicidins of five mammals: human (FALL39/LL37), rabbit (CAP18), mouse (mCRAMP), rat (rCRAMP), and sheep (SMAP29 and SMAP34). These peptides were tested at ionic strengths of 25 and 175 mM against Pseudomonas aeruginosa, Escherichia coli, Staphylococcus aureus, and methicillin-resistant Staphylococcus aureus. Each peptide manifested activity against P. aeruginosa irrespective of the NaCl concentration. CAP18 and SMAP29 were the most effective peptides of the group against all test organisms under both low- and high-salt conditions. Select peptides of 15 to 21 residues, modeled on CAP18 (37 residues), retained activity against the gram-negative bacteria and methicillin-sensitive S. aureus, although the bactericidal activity was reduced compared to that of the parent peptide. In accordance with the behavior of the parent molecule, the truncated peptides adopted an alpha-helical structure in the presence of trifluoroethanol or lipopolysaccharide. The relationship between the bactericidal activity and several physiochemical properties of the cathelicidins was examined. The activities of the full-length peptides correlated positively with a predicted gradient of hydrophobicity along the peptide backbone and with net positive charge; they correlated inversely with relative abundance of anionic residues. The salt-resistant, antimicrobial properties of CAP18 and SMAP29 suggest that these peptides or congeneric structures have potential for the treatment of bacterial infections in normal and immunocompromised persons and individuals with cystic fibrosis.

Trerotola S.O. *Hemodialysis catheter placement and management.* Radiology. 2000; 215(3) : 651-8.p Abstract: Hemodialysis catheters are an integral part of the delivery of hemodialysis. While catheters play an important role in the patient undergoing hemodialysis, catheters should be considered a bridge to more permanent forms of dialysis access in most patients. Recent advances in catheter technology, access techniques, and choice of access sites have improved outcomes associated with hemodialysis catheters. The placement and management of hemodialysis catheters by interventional radiologists have played an important role in these advances, and interventional radiologists are taking an increasingly active role in the research and development of catheters and catheter insertion techniques. The present status of hemodialysis catheters is reviewed.

Trerotola S.O. et al. *Tunneled infusion catheters: increased incidence of symptomatic venous thrombosis after subclavian versus internal jugular venous access.* Radiology. 2000; 217(1) : 89-93.p Abstract: PURPOSE: To compare the incidence of symptomatic venous thrombosis after tunneled infusion catheter placement via the internal jugular vein (IJV) versus the subclavian vein (SCV). MATERIALS AND METHODS: A retrospective analysis was performed of 774 catheters placed. Only patients with complete follow-up were

included, which yielded a population of 279 catheters in 238 patients (166 in the SCV, 113 in the IJV; total of 26,242 catheter days). All catheters were placed by interventional radiologists with ultrasonographic (in IJV) or venographic (in SCV) guidance. RESULTS: Initial complications were limited to one pneumothorax in the SCV group and one episode of oversedation in the IJV group. There was no difference in infection rates between the two sites (SVC vs IJV: 0.25 vs 0.32 per 100 catheter days; P >.99). The mean dwell time was slightly longer for SCV catheters (103 days) than for IJV catheters (79 days) (P =.04). Venous thrombosis developed in 13% of patients (0.12 per 100 catheter days) with an SVC catheter placed as compared with in 3% (0.04 per 100 catheter days) with an IJV catheter (P =.018). This difference persisted after adjustment for catheter size and side of placement (P =.025). The mean time to thrombosis was 36 days for SCV catheters and 142 days for IJV catheters. CONCLUSION: The IJV is the preferred site for tunneled infusion catheter placement because of the lower incidence of symptomatic venous thrombosis.

Trevino S. *Antibiotic resistance monitoring: a laboratory perspective.* Mil Med. 2000; 165(7 Suppl 2) : 40-2.p Abstract: Efficient monitoring of antimicrobial resistance (AR) can produce timely and important data and information that will benefit patients and could assist in the detection of a bioterrorist event. The microbiology laboratory staff of the largest U.S. Air Force medical facility attempted to improve AR monitoring at their hospital by reviewing their current capabilities and the capabilities of other available monitoring systems. The systems reviewed included the DataTrac System (Vitek bioMerieux, Hazelwood, Missouri) and the military Composite Health Care System, which were already in use, and the WHONET 5 (World Health Organization, Geneva, Switzerland) and The Surveillance Network (MRL Pharmaceutical Services, Herndon, Virginia). The Surveillance Network was selected for incorporation into the hospital AR monitoring program with modifications to comply with military command requirements. Information gathered during the review and selection process are presented and may be helpful to others who are looking to improve their hospital AR monitoring programs.

Triantafilo V. et al. *[E-test to study small inhibitor concentrations, bacterial diversity and to identify presumptively beta-lactamases in strains of Pseudomonas aeruginosa and Acinetobacter baumannii associated with +nosocomial infections].* Rev Med Chil. 1997; 125(2) : 149-60.p Abstract: BACKGROUND: Pseudomonas aeruginosa and Acinetobacter baumanii are two important nosocomial agents that require permanent testing of their antimicrobial susceptibility. AIM: To use E-test to determine minimal inhibitory concentrations, estimate bacterial diversity and presumably identify B-lactamases of strains of Pseudomonas aeruginosa and Acinetobacter baumanii isolated from nosocomial infections. MATERIALS AND METHODS: Sixty eight strains of Pseudomonas aeruginosa and Acinetobacter baumanii isolated in a teaching hospital were analyzed with E-test strips to determine their minimal inhibitory concentrations for different antimicrobials. RESULTS: More than 75% of Acinetobacter baumanii were resistant to Piperacillin, Cefpirome, Cefepime, Gentamicin or Amikacin, 40% of strains were resistant to Ceftazidime, 27 and 53% of isolates had a decreased susceptibility to Meropenem and Piperacillin-tazobactam respectively. Twenty eight to 54% of Pseudomonas aeruginosa strains were resistant to Cefepime, Cefpirome, Ciprofloxacin and Gentamicin. Eighteen and 10% of strains were resistant to Meropenem and Imipenem respectively. Less than 10% of strains were resistant to Amikacin, Azireonam, Piperacillin-tazobactam or Ceftazidime. Most of beta-lactam resistance of Pseudomonas aeruginosa was associated to decreased susceptibility or resistance to Cefpirome, Cefepime or to Meropenem-Imipenem and did not match clearly with known beta-lactamase profiles. CONCLUSIONS: The knowledge of susceptibility of these bacteria responsible for nosocomial infections, will help to plan the appropriate use of antimicrobials.

Troidle L. et al. *Nine episodes of CPD-associated peritonitis with vancomycin resistant enterococci.* Kidney Int. 1996; 50(4) : 1368-72.p Abstract: Nine episodes of chronic peritoneal dialysis (CPD)-associated peritonitis with vancomycin resistant enterococci (VRE) were described between November 1993 and February 1996 in our dialysis unit. During the time period, 216 patients were treated for 227 episodes of peritonitis. Of the patients developing peritonitis with VRE the mean age +/- SD was 56.3 +/- 9.7 years. There were 5 females, 4 males, 5 Caucasians and 4 African-Americans. Diabetes mellitus, cardiovascular disease and gastrointestinal disease were present in 7, 8 and 7 of the 9 patients with VRE peritonitis, respectively. Patients were maintained on CPD therapy for an average of 29.9 +/- 19.2 patient months before developing VRE peritonitis. The prior rate of CPD associated peritonitis in the patients developing VRE peritonitis was significantly higher than the rate noted in the CPD patients not developing peritonitis with VRE (1 episode in 6.3 patient months vs. 1 episode in 12.5 patient months, P < 0.05). All 9 patients had used vancomycin in the six months prior to the development of VRE peritonitis and 78% had used a cephalosporin. The antimicrobial therapy used to eradicate peritonitis with VRE varied among the 9 patients with chloramphenicol used in 4 patients. The Tenckhoff catheter was removed in 6 of the 9 patients and was successfully reinserted in one patient. The catheter was not removed in 3 patients and 2 of these patients expired. Five of the 9 patients expired while being treated for VRE, 2 transferred to hemodialysis and 2 continued CPD therapy. VRE peritonitis is a major concern for patients maintained on CPD therapy. Future studies are needed with case controls to determine the significance of prior vancomycin and cephalosporin therapy, fecal VRE carriage and certain demographic data on the acquisition of VRE peritonitis. Furthermore, the optimal therapy and outcome may be better clarified through such a review.

Trouillet J.L. et al. *Ventilator-associated pneumonia caused by potentially drug-resistant bacteria.* Am J Respir Crit Care Med. 1998; 157(2) : 531-9.p Abstract: To determine risk factors for ventilator-associated pneumonia (VAP) caused by potentially drug-resistant bacteria such as methicillin-resistant Staphylococcus aureus, Pseudomonas aeruginosa, Acinetobacter baumannii, and/or Stenotrophomonas maltophilia, 135 consecutive episodes of VAP observed in a single ICU over a 25-mo period were prospectively studied. For all patients, VAP was diagnosed based on results of bronchoscopic protected specimen brush (> or = 10(3) cfu/ml) and bronchoalveolar lavage (> or = 10(4) cfu/ml) specimens. Seventy-seven episodes were caused by "potentially resistant" bacteria and 58 episodes were caused by "other" organisms. According to logistic regression analysis, three variables among potential factors remained significant: duration of mechanical ventilation (MV) > or = 7 d (odds ratio [OR] = 6.0), prior antibiotic use (OR = 13.5), and prior use of broad-spectrum drugs (third-generation cephalosporin, fluoroquinolone, and/or imipenem) (OR = 4.1). Distribution of the 245 causative bacteria was analyzed according to four groups defined by prior duration of MV (< 7 or > or = 7 d) and prior use or lack of use (within 15 d) of antibiotics. Although 22 episodes of early-onset VAP in patients receiving no prior antibiotics were caused by antibiotic-susceptible bacteria, 84 episodes of late-onset VAP in patients receiving prior antibiotics were mainly caused by potentially resistant bacteria. Differences in the potential efficacies (ranging from 100% to 11%) against microorganisms of 15 antimicrobial regimens were studied according to classification into these four groups. These findings may provide a more rational basis for selecting the initial therapy of patients suspected of having VAP.

Trupl J. et al. *The incidence of penicillin-resistant pneumococci in the Slovak Republic. Pneumococcus Study Group.* Chemotherapy. 1997; 43(5) : 316-22.p Abstract: The prevalence of penicillin-resistant Streptococcus pneumoniae and multiresistant strains isolated in Europe from the early 1970s has continued to rise. Twenty-four microbiology laboratories in the Slovak Republic analyzed 4,018 S.

pneumoniae strains isolated from September 1, 1993, to December 31, 1993. The overall resistance rate to penicillin was 3.4% in strains isolated from outpatients and 8.5% from inpatients with considerable variation between regions. The highest regional resistance rate to penicillin was 21% from outpatients in Levice, in the western Slovakia, and ranged between 13 and 52% in strains collected from hospitalized patients in 6 regions. Rates of penicillin-resistant pneumococci were significantly higher (p < or = 0.01) in children aged < or = 3 years. Two thirds of penicillin-resistant strains had intermediate levels of resistance (MICs 0.1-1 microgram/ml) and one third was resistant (MICs 2-8 micrograms/ml). Resistance to multiple classes of agents was found in 75.9% of penicillin-resistant strains. These data support continued surveillance of antimicrobial resistance in pneumococcal infections. Standardization of susceptibility testing methods and monitoring of clinical outcomes is of critical importance to this complex problem.

Trzcinski K. et al. *Simultaneous persistence of methicillin-resistant and methicillin-susceptible clones of Staphylococcus aureus in a neonatal ward of a Warsaw hospital.* J Hosp Infect. 1997; 36(4) : 291-303.p Abstract: Fifty-seven methicillin-resistant Staphylococcus aureus (MRSA) isolates from babies (N = 31), carriers amongst health care workers (N = 16; 10% of all staff members) and the environment (N = 10); 39 MSSA isolates, from babies (N = 18), health care workers (N = 5) and environment (N = 16) were analysed. The strains were from the neonatal ward of a teaching hospital in Warsaw and were collected over a period of 16 months (1993/1994). The isolates were characterized by phage-typing, arbitrary-primed polymerase chain reaction (AP PCR), DNA repeat polymorphism within the protein A gene and the resistance pattern to antimicrobial agents. The presence of the mecA gene was determined by PCR. MRSA were classified as heterogeneously resistant to methicillin, susceptible to other antimicrobial agents and, except for three isolates, appeared to be genotypically almost identical. The first example of mupirocin resistant MRSA in Poland was documented. Amongst MSSA isolates, increased variability was seen, however, the persistence of one predominate clone of MSSA was shown. In this particular hospital environment, several different strains of both MRSA and MSSA were capable of maintaining persistent colonization.

Tsai A.C. et al. *Clinical evaluation of ciprofloxacin ophthalmic solution in the treatment of refractory bacterial keratitis.* J Formos Med Assoc. 1995; 94(12) : 760-4.p Abstract: Ciprofloxacin is a fluoroquinolone antimicrobial agent inhibiting bacterial DNA gyrase, with good in vitro and in vivo activity against many Gram-positive and Gram-negative ocular pathogens. It has low toxicity, low resistance rate and low minimum inhibitory concentration. The purpose of this study was to evaluate the efficacy of ciprofloxacin in treating bacterial keratitis refractory to conventional therapy. Thirty patients with smear-proven bacterial ulcers were treated by conventional therapy. Of these, cultures were positive in 28 (93.3%) patients. Pseudomonas aeruginosa was isolated in 13 (46.4%) patients, nontuberculous mycobacteria in nine (32.1%) and other bacteria in six (21.4%). Fifteen patients (50%) were cured with conventional therapy. Four patients (13.3%) underwent surgery due to impending corneal perforation. Eleven patients were shifted to ciprofloxacin therapy because of poor results with conventional treatment. Of these, eight (72.7%) patients were treated successfully. No adverse events were encountered except a white crystalline precipitate in two cases which resolved spontaneously after discontinuation of therapy. In view of its effectiveness and low toxicity, ciprofloxacin should be considered in treating bacterial keratitis which is refractory to conventional therapy.

Tsetsarskii B.M. et al. *[New trends in antimicrobial therapy of chronic purulent mesotympanitis].* Vestn Otorinolaringol. 1999; (2) : 49-50.p Abstract: Antibiotic therapy with colbiocin of chronic purulent mesotympanitis achieved a response rate of 92%, recurrence-free interval reached 6 months in 84% of the treated patients. This allows to recommend colbiocin as a drug of choice in hospital and outpatient treatment of chronic purulent mesotympanitis.

Tsotinis A. et al. *Synthesis and antimicrobial evaluation of indole containing derivatives of 1,3,4-thiadiazole, 1,2,4-triazole and their open-chain counterparts.* Arzneimittelforschung. 1997; 47(3) : 307-10.p Abstract: The increasing clinical importance of drug-resistant bacterial pathogens has lent additional urgency to microbiological and antibacterial research. New indolic derivatives of triazoles, thiadiazoles and their respective open-chain thiosemicarbazides were evaluated for antibacterial and antifungal activity. The microorganisms used were the Gram-negative bacteria Escherichia coli ATCC 35218 and Pseudomonas aeruginosa ATCC 27853, the Gram-positive bacteria Staphylococcus aureus ATCC 25923 and Bacillus subtilis BBL 12084 and the yeasts Candida and Saccharomyces cerevisiae ATCC 2366. The most potent compounds were indole derivatives (12a-c) bearing 1,2,4-triazo-thien-5-yl moiety, which exhibit interesting antibacterial and antifungal activities.

Tsygankov V.N. et al. *[Method for determining the position of the catheter end in the central vein].* Anesteziol Reanimatol. 2000; (1) : 52-5.p Abstract: The position of the catheter end in the central vein was studied by the x-ray, ultrasonic, and electrometric methods during catheterization of 69 veins in 66 patients. The position was incorrect in 64% cases. Electrometric method for detecting the position of the end of venous catheter is the most available for intensive care wards of municipal hospitals, because no special equipment or staff is needed, the method is simple, can be used directly during catheterization, and is cheap.

Tullu M.S. et al. *Bacterial profile and antimicrobial susceptibility pattern in catheter related nosocomial infections.* J Postgrad Med. 1998; 44(1) : 7-13.p Abstract : This prospective study was carried out over a period of 6 months in the Paediatric Intensive Care Unit (PICU) of a tertiary care teaching hospital. The aim of the study was to determine the organisms causing catheter related nosocomial infections in the PICU and to study their antimicrobial susceptibility pattern. Patients with endotracheal intubation, indwelling urinary catheters and central venous catheters (CVC)/venous cutdown catheters were included in the study. Colonization of the endotracheal tube, urinary catheter related infections (UCRI) and colonization of the CVC/venous cutdown catheters was studied. E. coli was the commonest organism colonizing the endotracheal tube tip with maximum susceptibility to cefotaxime and amikacin. E. coli was also was the commonest organism causing UCRI with maximum susceptibility to nitrofurantoin and amikacin. Acinetobacter was the commonest organism colonizing the CVC/venous cutdown catheters with maximum susceptibility to ciprofloxacin. All these sites of catheter related infections considered together, E. coli and Klebsiella were the commonest nosocomial organisms. Both had maximum susceptibility to amikacin. Methicillin resistant Staphylococcus aureus (MRSA) was isolated only from one culture. All the organisms had a poor susceptibility to cefazolin and amoxycillin. A knowledge of the resident microbial flora and their antimicrobial susceptibility pattern is necessary for formulating a rational antibiotic policy in an ICU.

Tumbarello M. et al. *Bacterial pneumonia in HIV-infected patients: analysis of risk factors and prognostic indicators.* J Acquir Immune Defic Syndr Hum Retrovirol. 1998; 18(1) : 39-45.p Abstract: This case control study assessed risk factors and prognostic indicators of 350 episodes of bacterial pneumonia in 285 HIV-infected patients. On univariate analysis, intravenous drug abuse (i.v.DA; p <.001 versus controls), regular cigarette smoking (p <.001), cirrhosis (p =.04), and history of a previous episode of pneumonia (p =.04) were risk factors for community-acquired episodes of bacterial pneumonia, whereas length of hospitalization (p =.01) was a risk factor only for nosocomial bacterial pneumonia. The small amount of circulating T CD4+ cells (<100/ mm3) was a risk factor in both groups of pneu-

monia (p <.05). Stepwise logistic regression analysis revealed that i.v.DA in community-acquired episodes and low levels of circulating T CD4+ cells, both in community-acquired and hospital-acquired episodes, were independent risk factors for the development of bacterial pneumonia. The case-fatality rate observed in our study was 27%. On stepwise logistic regression analysis, T CD4+ cell counts < or = 100/mm3 (p =.02), neutropenia (p =.04), PO2 arterial level < or = 70 mm Hg (p =.01), and Karnofsky score < or = 50 (p =.04) were independent indicators of mortality. According to a personally developed prognostic score, 211 episodes of pneumonia (60%) were classified as mild, 63 (18%) as moderate, and 76 (22%) as severe. Clinicians must carefully evaluate those variables that can influence the prognosis of bacterial pneumonia to make early identification of affected patients and to promptly establish the most appropriate therapeutic strategy in each case.

Tumbarello M. et al. *HIV-associated bacteremia: how it has changed in the highly active antiretroviral therapy (HAART) era.* J Acquir Immune Defic Syndr. 2000; 23(2) : 145-51.p Abstract: To evaluate the changing characteristics of HIV-associated bacteremia in the highly active antiretroviral therapy (HAART) era, we conducted a prospective case control study, comparing two periods of time, before (period A) and after (period B) the introduction of HAART. In total, 174 patients with bacteremia and 348 controls were studied. By comparing incidence in periods A and B, a statistically significant reduction of bacteremia, from 11.8 to 6.3/100 person-years (PY), was observed (p =.0001). Incidence of hospital-acquired bacteremia decreased from 5.8 episodes/100 PY in period A to 2.4/100 PY in period B (p =.0005). A similar trend was also observed for community-acquired episodes of bacteremia, with a value close to statistical significance. Logistic regression analysis indicated that intravenous drug abuse, central venous catheter (CVC) use, high value on APACHE III score, and neutropenia were independent risk factors for bacteremia in both the study periods. Interestingly, comparing the prevalence of bacteremia risk factors in the two study periods, we observed a significant reduction in the use of CVC (p =.04, period A versus period B) and in neutropenia (p =.04). The crude mortality rate was 31% in period A and 23% in period B (p = not significant [ns]). Logistic regression analysis indicated that an high value of Acute Physiology and Chronic Health Evaluation III (APACHE III) score (p <.001) predicted an increased risk of death. Analysis of prognostic factors of bacteremia did not significantly differ in both the study periods. We conclude that HAART has determined a significant reduction of the incidence and a modification of the characteristics of bacteremia. This reduced incidence may produce a substantial impact on future morbidity and health care costs of patients with HIV.

Tunger O. et al. *Evaluation of rational antibiotic use.* Int J Antimicrob Agents. 2000; 15(2) : 131-5.p Abstract: The emergence of antibiotic resistant bacteria is a major problem throughout the world and a rational use of antibiotics is therefore very important. This study was performed to estimate the appropriateness of antimicrobial drug use in Celal Bayar University Hospital in Manisa. The data of all inpatients (n=937) between October and December 1998 were collected according to the Kunin and Jones criteria. Of the patients, 16.6% (n=156) were receiving antibiotics, and in 63.5, 23.0 and 13.5% of these, a single, two and three agents were used, respectively. The purpose of antibiotic use was for prophylaxis in 23.9%, as an empiric decision in 71.4% and for therapeutic culture-based reasons in 4.7%. The rate of rational antibiotic use was 45.7% and it was statistically higher in those patients from whom specimens had been taken for culture than in patients receiving prophylactic or empiric antibiotics. On medical wards, rational antibiotic usage was 55.1%, while it was 26.3% in surgical wards (P<0.0001). The low rate of appropriate antibiotic use in our university hospital reflects the urgent need of rationalization.

Tuohy M. et al. *Antimicrobial susceptibility of viridans group streptococci.* Diagn Microbiol Infect Dis. 1997; 29(4) : 277-80.p Abstract: A total of 68 viridans group streptococci, including 31 Streptococcus sanguis, 12 S. mitis, 3 S. salivarius, and 8 S. milleri from blood, and an additional 14 S. milleri from abscesses and normally sterile sites, were tested against penicillin, amoxicillin, cefazolin, ceftriaxone, meropenem, clindamycin, quinupristin/dalfopristin, rifampin, levofloxacin, ofloxacin, vancomycin, and gentamicin with the microdilution method. The susceptibility rates for S. sanguis were: penicillin, 74%; amoxicillin, 84%; ceftriaxone, 94%; clindamycin, 87%, and vancomycin, 100%. The susceptibility rates for S. mitis were: penicillin, 42%; amoxicillin, 67%; ceftriaxone, 58%; clindamycin, 100%; and vancomycin, 100%. The susceptibility rates for S. milleri were: penicillin, 100%, amoxicillin. 100%; ceftriaxone, 100%, clindamycin, 100%; and vancomycin, 100%. Two of the three isolates of S. salivarius were susceptible to penicillin, amoxicillin, and ceftriaxone; all were susceptible to clindamycin and vancomycin. Levofloxacin, quinupristin/dalfopristin, and rifampin were highly active against all isolates.

Turco T.F. et al. *Vancomycin intermediate-resistant Staphylococcus aureus.* Ann Pharmacother. 1998; 32(7-8) : 758-60.p Abstract: OBJECTIVE: To describe further details about the third reported case of vancomycin intermediate-resistant Staphylococcus aureus (VISA). CASE SUMMARY: A patient with a history of recurrent methicillin-resistant S. aureus (MRSA) bacteremia was treated with several courses of vancomycin for 18 of 23 possible weeks on an inpatient/outpatient basis. After 6 months of repeated courses, an isolate of MRSA showed a minimum inhibitory concentration of 8 micrograms/mL, indicating intermediate resistance to vancomycin. The patient continued to receive a vancomycin/aminoglycoside/rifampin regimen and, when he was hospitalized several weeks later, no further MRSA or VISA was detected. DISCUSSION: Prolonged, intermittent vancomycin use (18 of 23 possible weeks) for MRSA bacteremia on an inpatient/outpatient basis most likely contributed to the development of VISA. Infection control measures prevented the spread of VISA among patients and healthcare workers. CONCLUSIONS: Infection control measures and evaluation of antimicrobial prescribing need to be strongly enforced to further prevent the spread and development of resistant organisms.

Turnidge J.D. et al. *Rapidly emerging antimicrobial resistances in Streptococcus pneumoniae in Australia. Pneumococcal Study Group.* Med J Aust. 1999; 170(4) : 152-5.p Abstract: OBJECTIVE: To examine the prevalence of resistance in Streptococcus pneumoniae to key antimicrobials in Australia during 1997. DESIGN: Prospective, Australia-wide, laboratory-based survey. SETTING: 11 microbiology laboratories from seven Australian States and Territories (five private laboratories and six public hospital laboratories) between March and November 1997. STRAINS: Up to 100 consecutive, clinically significant strains of S. pneumoniae isolated by each laboratory. MAIN OUTCOME MEASURES: Susceptibility to penicillin, amoxycillin-clavulanate, cefaclor, ceftriaxone, erythromycin, tetracycline, and sulfamethoxazole-trimethoprim (cotrimoxazole), measured by a gradient diffusion, minimum inhibitory concentration technique. RESULTS: Of 1020 strains, 16.8% had intermediate susceptibility to penicillin and 8.6% were resistant. Rates of resistance to other drugs were: amoxycillin-clavulanate, 3.1%; cefaclor, 21.4%; ceftriaxone, 3.1%; erythromycin, 15.6%; tetracycline, 15.7%; and cotrimoxazole, 33.4%. Non-invasive isolates harboured more resistances than invasive isolates, and resistance was more prevalent in isolates from children under two years. Multiple resistance was also common, with 21.2% of strains resistant to two or more classes of drug, and 9.3% of non-invasive and 1.7% of invasive isolates resistant to four classes. There were no obvious differences in resistance rates between private and public hospital laboratories. CONCLUSIONS: Rates of antimicrobial resistance are rising rapidly in S. pneumoniae in Australia. Recommendations for empiric treatment of invasive and respiratory infection need to take account of these changes.

Turnidge J.D. et al. *Evolution of resistance in Staphylococcus aureus in Australian teaching hospitals. Australian Group on Antimicrobial Resistance (AGAR).* Med J Aust. 1996; 164(2) : 68-71.p Abstract: OBJECTIVE: To assess the changes in antibiotic resistances in Staphylococcus aureus, both methicillin-susceptible and methicillin-resistant strains, in Australia. DESIGN: Retrospective review of data collected annually. SETTING: Twenty metropolitan teaching hospitals in the six States of Australia and the Australian Capital Territory from 1988 to 1994. OUTCOME MEASURES: Changes in prevalence and resistance rates of methicillin-resistant S. aureus (MRSA) and methicillin-susceptible strains, based on antibiotic susceptibility testing of clinical isolates of S. aureus. RESULTS: Prevalence of MRSA has remained constant on the eastern seaboard of Australia. A distinctive strain of MRSA emerged in Western Australia which had different antimicrobial susceptibilities. Resistances emerged in MRSA strains from eastern Australia, principally to ciprofloxacin and rifampicin, while resistance to fusidic acid remained stable and resistance to chloramphenicol significantly declined. Resistances in methicillin-susceptible strains remained fairly stable, except for a decline in resistance levels for tetracycline. High levels of resistance were seen to penicillin, moderate levels to erythromycin and low levels to trimethoprim and fusidic acid in methicillin-susceptible strains. CONCLUSIONS: The continued high prevalence of and increasing resistance in MRSA in some Australian hospitals have meant that some strains are now untreatable with oral antibiotics.

Twetman S. et al. *Pre- and post-treatment levels of salivary mutans streptococci and lactobacilli in pre-school children*. Int J Paediatr Dent. 1999; 9(2) : 93-8.p Abstract: OBJECTIVES: To examine the effect of operative and restorative treatment of dental caries on the levels of caries associated microorganisms in saliva and to relate alterations to the type and extent of treatment. DESIGN: Longitudinal. SETTING: Paediatric Dentistry Department at a central hospital in Sweden. SUBJECTS AND METHODS: One hundred and eight pre-school children with severe dental caries scheduled for treatment under general anaesthesia. Chair-side tests were used to estimate the levels of salivary mutans streptococci, lactobacilli and buffer capacity before the surgery and at recall appointments 1 and 6 months after treatment. Caries were assessed according to WHO guidelines and the number of extracted teeth and filled surfaces during surgery were recorded. RESULTS: The results demonstrate that the post-treatment levels of mutans streptococci and lactobacilli were significantly reduced ($P < 0.001$) compared to pretreatment levels. Lactobacilli levels were more dramatically reduced than mutans streptococci. The reduction of mutans streptococci was positively correlated to the number of extracted teeth ($P < 0.01$), but not to the number of restored or ground surfaces. Lactobacilli reduction was not significantly related to the type of treatment. CONCLUSION: The findings suggest that extensive operative and restorative dental care effectively reduces the levels of caries associated with microorganisms during a period of at least 6 months.

Twetman S. et al. *Influence of xylitol in dentifrice on salivary microflora of preschool children at caries risk*. Swed Dent J. 1995; 19(3) : 103-8.p Abstract: The aim was to study whether the use of a xylitol-containing dentifrice could affect the number of mutans streptococci and lactobacilli in preschool children with medium and high initial salivary counts. After screening 147 healthy preschool children, 3-6 years of age, 70 were selected and randomly assigned into two groups for 3-month's use of either a xylitol (9.7%) or a non-xylitol-containing fluoride dentifrice. The parents were trained to brush the teeth of their children twice daily in a standardized manner and the study was carried out double blind. Bacterial levels at screening and after 3 months were enumerated with aid of chair-side methods. No significant differences in mutans streptococci levels or lactobacilli counts after 3 months were obtained, either in comparison to baseline or between the groups. About 50% of all children exhibited unchanged bacterial scores at the end of the test period but more children in the xylitol group disclosed reduced scores of salivary mutans streptococci compared with the non-xylitol group (38% vs 16%). The results suggest that the dose level achieved by using this xylitol-containing dentifrice in preschool children, did not provide sufficient antibacterial action to suppress caries associated microorganisms in the saliva of those with high initial counts.

Tzelepi E. et al. *Antimicrobial susceptibility and types of Neisseria gonorrhoeae in Greece. Data for the period 1990 to 1993*. Sex Transm Dis. 1997; 24(6) : 378-85.p Abstract: BACKGROUND: Surveillance of the rapidly changing patterns of antimicrobial resistance of Neisseria gonorrhoeae is imperative for monitoring gonococcal infection. GOAL: To describe the types and the antimicrobial susceptibility profile of a representative samples of gonococci isolated in Greece between 1990 and 1993. STUDY DESIGN: The antimicrobial susceptibilities, serovar/auxotypes classes, and plasmid contents of 263 consecutive isolates of N. gonorrhoeae, recovered from cases of male gonococcal urethritis, were determined. RESULTS: Penicillinase-producing N. gonorrhoeae (PPNG) were isolated at a rate of 6.1% and were mostly from imported cases of infection. Six (2.3%) of the isolates (one PPNG and five non-PPNG) were highly resistant to tetracycline, and one PPNG strain was resistant to norfloxacin and ciprofloxacin. Strains with chromosomal resistance to penicillin, tetracycline, erythromycin, and chloramphenicol accounted for 18.5%, 12.5%, 19%, and 16% of the isolates, respectively; much higher proportions of strains were intermediately susceptible to these antibiotics. Spectinomycin and cefotaxime were active against all gonococci studied. A shift to IB serovars and to sporadic types of strains was noted from previous years among the non-PPNG isolates. This is compatible with the marked increase in the rate of imported cases of infection caused by n on-PPNG strains. CONCLUSIONS: The emergence of high-level resistance to tetracycline and resistance to fluoroquinolones was ascertained. At the present, however, the main problem with gonococcal resistance in Greece seems to ensue from the increasing rates of chromosomally resistant strains. Moreover, the increasing frequency of imported gonococci underlines the necessity for continuous epidemiologic surveillance.

Tzouvelekis L.S. et al. *SHV-type beta-lactamases.* Curr Pharm Des. 1999; 5(11) : 847-64.p Abstract: The group of plasmid-mediated SHV b-lactamases includes SHV-1 and at least twenty-three variants, most of which possess extended-spectrum (ES) activity against the newer broad-spectrum cephalosporins. Their likely ancestor is a chromosomal penicillinase of Klebsiella pneumoniae. SHV enzymes belong to the molecular class A of serine b-lactamases and share extensive functional and structural similarity with TEM b-lactamases. The three-dimensional structure of the SHV-1 b-lactamase possesses an active site wider than that of TEM-1 b-lactamase by 0.7 to 1.2 A. This results in subtle, yet important, differences in the positioning of critical active-site residues. SHV-1 b-lactamase behaves as a typical penicillinase hydrolyzing penicillins and early generation cephalosporins. SHV-1 b-lactamase has spread, via plasmids, to virtually all enterobacterial species but is encountered mostly in K. pneumoniae. ES SHV b-lactamases are found with increasing frequency in K. pneumoniae and other enterobacterial isolates and are now considered the most prevalent ES b-lactamases. These ES SHV b-lactamases confer a wide spectrum of resistance to b-lactams, including the new generation cephalosporins and monobactams, and are usually encoded by self-transmissible multi-resistant plasmids that are highly mobile. Extension of the hydrolytic spectrum of ES SHV enzymes to include oximino-b-lactams is seen as a result of substitutions of critical amino acid residues that alter the properties of the active site. These mutational changes, however, result in diminished hydrolytic activity against penicillins and an increased susceptibility to mechanism-based inhibitors. Understanding the substrate evolution, properties and modes of spread of these clinically important b-lactamases can help in formulating effective antibiotic policies and developing new antimicrobial agents.

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Udo E. et al. *Genetics of streptomycin resistance in methicillin-sensitive multiply-resistant Staphylococcus aureus.* J Chemother. 1995; 7(1) : 12-5.p Abstract: Streptomycin resistance was detected in 17 of 20 multiply-resistant Staphylococcus aureus isolates from a hospital in a south-eastern Nigerian town. The isolates were uniformly sensitive to methicillin, erythromycin, gentamicin, mupirocin, ciprofloxacin and vancomycin but produced beta-lactamase and were resistant to other antimicrobial agents and harbored different plasmids which ranged in size and number from 1.0 to c, 40 kb and one to six respectively. Curing and transfer experiments demonstrated that streptomycin resistance (Smr) was located on plasmids in 15 of the 17 isolates. 16 Smr plasmids were isolated and characterized. They belonged to three distinct groups based on size and resistance phenotypes. Eight 4.4 kb plasmids encoded Smr only, three 4.7 kb plasmids encoded resistance to streptomycin and chloramphenicol (SmCm) and five 23.8 kb plasmids encoded resistance to streptomycin, kanamycin, neomycin, cadmium and beta-lactamase production (CPKNS). Restriction endonuclease analysis demonstrated that the 4.4 kb Smr plasmids were similar to one another and indistinguishable from pUB109, an incompatibility group 5 Smr plasmid, suggesting that they may also belong to incompatibility group 5. The SmCm and the CPKNS plasmid groups also gave identical restriction patterns with single and double enzyme digests. Further transfer experiments with one of the SmCm plasmids led to the isolation of a 4.4 kb Smr plasmid which was indistinguishable from the other 4.4 kb plasmids, suggesting that the SmCm plasmids are natural recombinants between a streptomycin and chloramphenicol resistance plasmid. The results demonstrate a multiple origin of streptomycin resistance in the S. aureus population studied.

Udo E.E. et al. *Enterotoxin production by coagulase-negative staphylococci in restaurant workers from Kuwait City may be a potential cause of food poisoning.* J Med Microbiol. 1999; 48(9) : 819-23.p Abstract: Staphylococcus aureus and coagulase-negative staphylococci (CNS) were isolated from the hands of food handlers in 50 restaurants in Kuwait City and studied for the production of staphylococcal enterotoxins, toxic shock syndrome toxin-1, slime and resistance to antimicrobial agents. One or a combination of staphylococcal enterotoxins A, B or C were produced by 6% of the isolates, with the majority producing enterotoxin B. Toxic shock syndrome toxin-1 was detected in c. 7% of the isolates; 47% produced slime. In all, 21% of the isolates were resistant to tetracycline and 11.2% were resistant to propamidine isethionate and mercuric chloride. There was no correlation between slime and toxin production or between slime production and antibiotic resistance. The detection of enterotoxigenic CNS on food handlers suggests that such strains may contribute to food poisoning if food is contaminated by them and held in conditions that allow their growth and elaboration of the enterotoxins. It is recommended that enterotoxigenic CNS should not be ignored when investigating suspected cases of staphylococcal food poisoning.

Udo E.E. et al. *Molecular characterization of epidemic ciprofloxacin- and methicillin-resistant Staphylococcus aureus strains colonizing patients in an intensive care unit.* J Clin Microbiol. 1996; 34(12) : 3242-4.p Abstract: Eighteen methicillin-resistant Staphylococcus aureus (MRSA) samples isolated from patients and the environment in an intensive care unit (ICU) during a routine surveillance were tested for antimicrobial resistance and typed by pulsed-field gel electrophoresis. Three pulsed-field patterns were observed. Sixteen were ciprofloxacin resistant and had identical pulsed-field patterns. The results suggested that a ciprofloxacin-resistant MRSA clone had contaminated the environment and spread among patients. This study demonstrates the application of infection control surveillance combined with strain typing in detecting MRSA colonization in the ICU where it was not known to exist.

Udo E.E. et al. *Antimicrobial resistance of coagulase-negative staphylococci from a Kuwait hospital.* Microb Drug Resist. 1995; 1(4) : 315-20.p Abstract: This study investigated the incidence of antimicrobial resistance in clinically significant coagulase-negative staphylococci at the Mubarak Al Kabeer Hospital, Kuwait. A total of 104 isolates of coagulase-negative staphylococci consisting of S. epidermidis (67), S. haemolyticus (16), S. saprophyticus (6), S. simulans (2), S. hominis (4), S. albus (2), S. sciuri (3), S. warneri (2), S. capitis (1), and S. xylosus (1) were isolated from clinical specimens over a 6-7 month period and tested for resistance to 22 antibacterial agents and the ability to produce slime. They were all susceptible to vancomycin and mupirocin but intermediate resistance to teicoplanin was detected in seven isolates: 83 and 47.7% were resistant to penicillin G and methicillin, respectively, 57% were resistant to gentamicin, 49.5% to erythromycin, 50.4% to tetracycline, and 52.3% to trimethoprim. Resistance to heavy metals and the nucleic-acid binding compound was also detected. More than half of S. epidermidis, S. saprophyticus, S. simulans, S. hominis, and all of S. haemolyticus were multiply resistant to three or more groups of antibiotics and there was a significant association between slime production and resistance to multiple antimicrobial agents in S. epidermidis. The results revealed a high level of resistance to commonly used agents.

Udou T. *[Emergence of new-risk factors associated with nosocominal infection].* Sangyo Ika Daigaku Zasshi. 1998; 20(4) : 361-8.p Abstract: During the last several decades, we have experienced the emerging and reemerging of infectious pathogens and diseases. The outbreaks of infection due to these pathogens sometimes occur via the sources and/or routes which have not been recognized during previous studies on epidemiology and pathogenesis of the diseases. There are many factors contributing to the increase in infectious diseases. Namely, medical progress often results in an increasing number of immunocompromised patients. Common, usually avirulent, commensal and environmental organisms become pathogens to these patients. The evolution of organisms acquiring resistance to antimicrobial agents, disinfectants, and environmental stimuli also relates to the high incidence of nosocominal (hospital-acquired) infections as well as to the clinical situation of the patients. Because of these tendencies, as risks of nosocominal infections, are characteristic especially in major health care centers such as large teaching hospitals, most health care workers are obliged to participate actively in control and preventive efforts in addition to their traditional roles. In this review I discuss the recent characteristics of nosocominal pathogens and the environments surrounding the hospitalized patients to design effective strategies for and to facilitate the infection control activities.

Ueki R. et al. *[Iatrogenic extrapleural hematoma].* Masui. 2000; 49(1) : 37-9.p Abstract : We encountered a rare case of complications at the time of central venous catheterization due to extrapleural hematoma. A 71-year-old woman was scheduled to undergo subtotal gastrectomy. After introduction of general anesthesia, a CVP catheter was inserted from the right jugular vein, but it was removed intraoperatively, because of poor dropping of the infusion fluid. A few minutes later, the blood pressure started to decrease. We considered that this symptom was derived from the surgical procedure, and rapid blood transfusion associated with administration of a vasopressor was performed. Postoperative chest X ray revealed poorly delineated right lung field, and hemothorax was suspected. However thoracic drainage resulted in an extremely small amount of blood-like fluid. The abnormal defect in the right pulmonary field was found to be an extrapleural hematoma by thoracic CT on the first postoperative day. The hematoma was reduced by subsequent management in 7 days, and the patient was discharged from the ICU without any further complications.

Uesugi A. et al. *[Antimicrobial susceptibility of coagulase negative staphylococci isolated from urine].* Kansenshogaku Zasshi. 1996; 70(2) : 187-97.p Abstract: This study was conducted to investigate the antimicrobial susceptibilities of the strains of coagulase negative Staphylococci

(CNS) isolates from urine at Juntendo University Hospital in Tokyo from 1989 to 1994. The susceptibility testing were performed according to the broth dilution method standerdized by the Japan Society of Chemotherapy. The following bacteria were tested; Staphylococcus epidermidis (59 strains), Staphylococcus haemolyticus (42 strains), Staphylococcus saprophyticus (30 strains). The antimicrobial agents tested wre as follows; Oxacillin, Cefazolin, Imipenem, Flomoxef, Gentanicin, Tobramycin, Arbekacin, Clindamycin, Tetracycline, Minicycline, Vancomycin, Sulfamethoxaxole-Trimethoprim and, Ofloxacin. 1. 100% of S. caprae, 62% of S. haemolyticus and 42% of S. epidermidis were resistant to Oxacillin. All strains of S. saprophyticus were sensitive to Oxacillin. 2. S. saprophyticus showed the highest sensitivities to all anti-microbial agents. 3. All strains of S. caprae were resistant to Tobramycin and Clindamycine. 4. Vancomycin and Arbecacin has strong antimicrobial activities to all CNS. S. saprophyticus, which is the pathogen of acute urinary tract infections, showed high sensitivities to many antimicrobial agents. On the other hand, S. haemolyticus and S. caprae, which are the predominate microorganisms of bacteriuria of inpatients, showed high resistance rates to antimicrobial agents.

Ugrimov S.A. et al. *[Evaluation of a system of multimicrotests for biochemical identification of enterobacteria (MMT E2) in a controlled epidemiological trial. 2].* Klin Lab Diagn. 1995; (1) : 49-51.p Abstract: Commercial system of multimicrotests for biochemical identification of enterobacteria MMT E2 and routine tube tests were compared in a controlled epidemiologic experiment with 205 enterobacterial strains. The system has been developed at the Allergen Research and Production Amalgamation. System MMT E2 fairly well met the requirements to diagnostic preparations of this kind; its results were compatible and well reproducible. This system in complex with commercial MMT E1 system may be used for species identification of enterobacteria. Practical application of both the systems will considerably simplify the process of identification of these microorganisms.

Uh Y. et al. *Colonization rates and serotypes of group B streptococci isolated from pregnant women in a Korean tertiary hospital.* Eur J Clin Microbiol Infect Dis. 1997; 16(10) : 753-6.p Abstract: In a study designed to provide data on the rates of maternal carriage of group B streptococci (GBS) in Korean women, vaginal, anorectal, and urethral swab specimens from 459 pregnant women and ear canal and umbilicus swabs from their 288 neonates were cultured with new Granada medium and selective Todd-Hewitt broth. Additionally, the serotypes of 64 isolates of GBS and the minimal inhibitory concentrations of seven antimicrobial agents for these isolates were determined. The rate of colonization by GBS in pregnant women and in their babies was 5.9% (27/459) and 0.7% (2/288), respectively. The rates of resistance of GBS isolated from pregnant women were 13.3% to clindamycin, 5% to erythromycin, and 98.3% to tetracycline. The majority of GBS isolates from pregnant women belonged to serotypes Ib (48.3%), Ia (24.1%), and III (20.7%).

Umezawa K. et al. *Chloptosin, an apoptosis-inducing dimeric cyclohexapeptide produced by Streptomyces.* J Org Chem. 2000; 65(2) : 459-63.p Abstract: In the course of screening for apoptosis-inducing agents, chloptosin (1) was isolated from the culture broth of Streptomyces. The dumbbell-type structure of the dimeric cyclohexapeptide consisting of D-valine, (3S)- and (3R)-piperazic acids, O-methyl-L-serine, D-threonine, and (2S,3aR,8aR)-6-chloro-3a-hydroxy-2,3,3a, 8a-hexahydropyrrolo[2,3-b]indole-2-carboxylic acid was elucidated by spectroscopic and chemical degradation studies. The amino acid components in each cyclohexapeptide domain were presented in alternating R and S configurations. Chloptosin (1) was found to induce apoptotic activity in apoptosis-resistant human pancreatic adenocarcinoma cell line AsPC-1 and showed a strong antimicrobial activity against Gram-positive bacteria including methicillin-resistant Staphylococcus aureus.

Unal S. et al. *Treatment of enteric fever with pefloxacin for 7 days versus 5 days: a randomized clinical trial.* Antimicrob Agents Chemother. 1996; 40(12) : 2898-900.p Abstract: In this prospective study of enteric fever, 22 patients received 400 mg of pefloxacin twice daily for 5 days (group A) and 24 received 400 mg of pefloxacin twice daily for 7 days (group B). Causative microorganisms were Salmonella typhi (8 in group A, 11 in group B) and Salmonella paratyphi B (14 in group A, 13 in group B). The clinical cure and bacterial eradication rates were 96% (21 of 22) in group A and 100% in group B. In conclusion, 5-day oral administration of pefloxacin was as effective as 7-day treatment of enteric fever caused by Salmonella spp.

Ungureanu V. et al. *Study of the sensitivity to antimicrobial drugs of some S. pneumoniae strains isolated from different pathological states.* Roum Arch Microbiol Immunol. 1996; 55(3) : 241-51.p Abstract: 76 Str.pneumoniae strains isolated from different clinical disease forms were studied for the sensitivity to antimicrobial drugs using the diffusimetric method and the dilution in agar method (MIC to penicillin). The results revealed that 44.74% of pneumococci were sensitive to penicillin, the remaining pneumococci being resistant; 18.42% showed a high resistance (MIC > or = 2 micrograms/ml). A close relationship was seen between sensitivity to penicillin on the one hand and the Pneumococcus origin and serotype on the other. As concerning the multiresistance to antimicrobial drugs, 47.4% of the strains presented resistance to > or = antibiotics belonging to different classes, the most frequent resistance pattern being P, E, Te, SxT. The most active antimicrobial drugs were vancomycin, amoxiclave, rifampicin, followed by ceftriaxone and amoxicillin.

Unkel J.H. et al. *Comparison of odontogenic and nonodontogenic facial cellulitis in a pediatric hospital population.* Pediatr Dent. 1997; 19(8) : 476-9.p Abstract: Facial cellulitis in the pediatric hospital population can be classified as odontogenic and nonodontogenic. Emergency departments welcome timely diagnosis from consultants as cellulitis is associated with significant morbidity in children. The purpose of this retrospective study is to assist pediatric dentists in recognizing differences between odontogenic and nonodontogenic facial cellulitis and to determine whether odontogenic infections make up a major portion of facial swellings seen upon admission to the hospital. The completed medical records of 100 patients admitted to Children's Hospital of Pittsburgh from 1980-1989 with an ICD-9 diagnosis of facial cellulitis were reviewed. The types of cellulitis were differentiated using admission data. The information reviewed included age, sex, temperature, white blood cell count, location of facial infection, and season of the year. Odontogenic cellulitis comprised approximately 50% of the total hospital facial infections of the records reviewed during the 10-year period. Upon admission, patients with odontogenic and nonodontogenic facial cellulitis have similarities (season of onset during the year, febrile temperature, and location of infection) and differences (mean admission temperature, age at time of affliction, white blood cell count, and most commonly occurring microorganisms.

Uppot R.N. et al. *Entanglement of guide wires by vena cava filters during central venous catheter insertion: report of three cases and a review of the literature.* Del Med J. 2000; 72(2) : 69-73.p Abstract: Since 1993, 14 cases of central line guide wires becoming entangled with vena cava filters have been reported. We present three additional cases and review the 14 cases in the literature. Obtaining a detailed patient history is important in identifying patients with a vena cava filter. A low threshold of suspicion is needed and immediate radiograph obtained. Entangled guide wires required fluoroscopic manipulation and or retrieval of the dislodged filter. Of all reported cases, only one sustained an arrhythmia. With no signs and symptoms, conservative management of the dislodged filter is a viable option.

Urao M. et al. *Does probiotics administration decrease serum endotoxin levels in infants?* J Pediatr Surg. 1999; 34(2) : 273-6.p Abstract: PURPOSE: The aim of this study was to examine whether administration of

probiotics to infants can change the ratio of intestinal flora and thereby decrease serum endotoxin produced by potentially pathogenic microorganisms. METHODS: Nine infants including five with of biliary atresia, two with omphalocele, one each with Hirschsprung's disease and imperforate anus were studied. All patients were stable, and no antibiotics were given during this study. A probiotic mixture consisting of Streptococcus faecalis, Clostridium butyricum and Bacillus mesentericus was administered orally to each infant at 2 g/day for 2 weeks. Fecal aerobic and anaerobic bacterial cultures, serum endotoxin level, and other biochemical parameters were examined. RESULTS: In fecal cultures, anaerobic bacteria including Bifidobacterium increased significantly whereas Escherichia coli, Streptococcus, and Klebsiella tended to decrease. The ratio of anaerobic to aerobic bacteria increased five times as a result of administration of probiotics, and serum endotoxin levels decreased. CONCLUSIONS: Probiotics affect intestinal bacterial flora by increasing anaerobic bacteria and decreasing the population of potentially pathogenic microorganisms. A decrease in luminal endotoxin may result in less endotoxin translocation or bacterial translocation.

Urassa W. et al. *Recent trends on bacterial resistance to antibiotics.* East Afr Med J. 1997; 74(3) : 129-33.p Abstract: Antimicrobial resistance has become a major medical and public health problem. The main factor responsible for development and spread of bacterial resistance is injudicious use of antimicrobial agents which has resulted in most gram positive and gram negative bacteria continuously developing resistance to the antimicrobials in regular use at different time periods. In East Africa, among E. coli in urinary tract infections, more than 80% are currently resistant to ampicillin, cotrimoxazole and tetracycline while more than 80% of the isolates are still susceptible to nitrofurantoin, gentamicin and third generation cephalosporins. Penicillin G resistant strains of pneumococci were first reported in 1967 but had gradually increased to about 20% in 1991. Among group A streptococci, all natural strains are still sensitive to penicillin G while resistance to tetracycline has reached alarming proportions. In Tanzania, more than 65% of N. gonorrhoeae isolates are beta-lactamase producers, however, spectinomycin, second and third generation cephalosporins and ciprofloxacin are effective against most strains. Vibrio cholerae 01 strains resistant to multiple antibiotics are widely spread globally, however, there are recent reports indicating that withdrawal of the drugs can lead to loss of the antibiotic resistance factors. Despite varied susceptibility of N. meningitidis strains world wide, isolates in Tanzania are still susceptible to commonly available drugs including penicillin G and chloramphenicol. Available methods for control of spread of bacterial resistance include rational use of antimicrobial agents including control in animal husbandry, change to newer antimicrobials, rotational use of drugs and constant surveillance for emerging bacterial resistance.

Urassa W.K. et al. *Antimicrobial susceptibillty of Staphylococcus aureus strains at Muhimbili Medical Centre, Tanzania.* East Afr Med J. 1999; 76(12) : 693-5.p Abstract: OBJECTIVE: To determine the antimicrobial susceptibility pattern of S. aureus isolates including the presence of methicillin resistant S. aureus strains. DESIGN: Cross-sectional study. SETTING: Department of Microbiology and Immunology, Muhimbili Medical Centre, Dar es Salaam, Tanzania between October 1997 and March 1998. PATIENTS: Two hundred and sixty patients consisting of 67 neonates, 114 children aged 18 years and below and 79 adults. MAIN OUTCOME MEASURES: Antimicrobial susceptibility to tetracycline, erythromycin, cefuroxime, methicillin and penicillin G and presence of mec A gene. RESULTS: Among the S. aureus strains, 97.3%, 68.1%, 37.3% and 6.5% were sensitive to cefuroxime, erythromycin, tetracycline and penicillin G respectively. Only one (0.4%) S. aureus isolate was resistant to methicillin using both the E test and presence of mec A gene. There was no significant difference between the sensitive S. aureus isolates from the neonates, children and adults. CONCLUSION: S. aureus strains are becoming more resistant to commonly used antimicrobial agents, the prevalence of methicillin resistant S. aureus strains in our study population is low compared with reported studies.

Urassa W.K. et al. *Susceptibility pattern of uropathogenic gram negative bacilli to antimicrobial chemotherapeutic agents in a National Hospital in Dar es Salaam.* East Afr Med J. 1997; 74(3) : 162-5.p Abstract: In a period of two months, 232 consecutive urinary tract pathogens were isolated from hospitalised and non-hospitalised patients. Among the isolates, 200 (86.2%) were gram negative bacilli, including E. coli 109 (54.5%), Klebsiella species, 44 (22.5%), Enterobacter species 19 (9.5%), Proteus species 18 (9%), Morganella morganii 9 (4.5%) and Salmonella typhimurium, one (0.5%). Antimicrobial susceptibility testing to amoxycillin/clavulanic acid, nitrofurantoin, gentamicin and cefuroxime was performed using Stoke's method. Among the 109 E. coli isolates, 107 (98.2%), 104 (94.5%), 105(95.5% and 107 (98.2%) were sensitive to amoxycillin/clavulanic acid, cefuroxime, nitrofurantoin and gentamicin, respectively. Of the 44 Klebsiella isolates, 42 (95.5%), 41 (95.5%), 40 (90.9%) and 34 (77.3%) were sensitive to amoxycillin/clavulanic acid, cefuroxime, nitrofurantoin and gentamicin, respectively. There was no significant difference when the suceptibility patterns of isolates from hospitalised patients were compared to those from outpatients. Although the susceptibility pattern of urinary tract pathogens to the commonly used antimicrobial agents in the hospital is still favourable, there is a need to establish strategies to prevent emergence of resistant bacterial strains.

Urdez-Hernandez E. et al. *Epidemiological and biological characteristics of methicillin-resistant staphylococcal infections in a Mexican hospital.* Arch Med Res. 1999; 30(4) : 325-31.p Abstract: BACKGROUND: Methicillin-resistant Staphylococcus aureus (MRSA) has spread worldwide since 1960. However, there is little information concerning methicillin-resistant coagulase-negative staphylococci (MRCNS) infections. METHODS: In order to study the clinical and epidemiological characteristics of methicillin-resistant staphylococci (MRS) infections and to determine the relationship between MRS and both synergistic hemolysis (SH) and slime production (SP), a laboratory-based survey and non-matched case-control study were carried out at a tertiary-care center in Mexico City. In regard to patients, from May 1991 to October 1992, 46 cases of MRS infection and 86 patients (controls) infected by methicillin-susceptible staphylococci (MSS) were included. Clinical and epidemiologic variables were analyzed. The isolates were identified and tested for antimicrobial susceptibility by standard methods. An MIC of oxacillin > or = 8 micrograms/mL was defined as an MRS. RESULTS: During the study, 94 nosocomial staphylococcal infections were diagnosed: S. aureus, 35 and CNS, 59; 43 (45.7%) by MRS (rate of MRS infections was 1.12 per 100 in-patients); 2 MRSA; 41 MRCNS, and only 19 were symptomatic. Three infections were community-acquired, including one MRSA and two MRCNS. After multivariate analysis, the significant risk factors were previous antimicrobial therapy ($p = 0.013$) and catheter-related ($p = 0.009$) and urinary-tract source ($p = 0.0001$). Forty-nine percent of MRS showed SH while only 15% of MSS ($p < 0.001$) showed SH, especially in 10/10 MR-S. hemolyticus. Additionally, 48% of MRCNS showed SP, as did 18% of MSCNS ($p = 0.019$), particularly in 15/20 MR-S. epidermidis. Of all MRS isolates, 38% showed a homogeneous phenotype, a trait associated with multi-drug resistance ($p < 0.01$) and SH ($p < 0.001$). CONCLUSIONS: CNS predominated as the cause of MRS infections in our setting. The homogenous phenotype was associated with SH and multi-drug resistance.

Uwaydah M. et al. *Antimicrobial resistance of clinical isolates of Streptococcus pneumoniae in Lebanon.* J Antimicrob Chemother. 1996; 38(2) : 283-6.p Abstract: A total of 61 clinical isolates of Streptococcus pneumoniae from Lebanon were tested for their susceptibility to penicillin G and seven other antibiotics by the agar dilution technique. All penicillin-susceptible isolates were also susceptible to chloramphenicol, ceftriaxone and erythromycin. Penicillin-resistant isolates were consistently susceptible only to erythromycin.

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Vacca Smith A.M. et al. *Studies concerning the glucosyltransferase of Streptococcus sanguis.* Caries Res. 2000; 34(4) : 295-302.p Abstract: We have shown in previous studies that the glucosyltransferase (Gtf) enzymes of Streptococcus mutans have distinct properties when adsorbed to a surface. In the present study, we compared the activity of Gtf from Streptococcus sanguis, designated GtfSs, in solution and on the surface of saliva-coated hydroxyapatite (sHA) beads, and determined the ability of its product glucan to support the adherence of oral microorganisms. Gtf from S. sanguis 804 NCTC 10904 was purified from culture supernatant fluids by means of hydroxyapatite chromatography. Enzyme and the substrate were prepared in buffers at pH values from 3.5 to 7.5. Maximum activity of GtfSs occurred between pH 5.5 and pH 6.5, whether in solution or adsorbed onto a surface. The solubilized and insolubilized enzymes showed highest activity at 40 degrees C; activity was reduced by 50(+/-2)% at 20 and 30 degrees C. The enzyme did not form glucans in either phase at 10 or 60 degrees C. The K(m), determined from Lineweaver-Burk plots, for the enzyme in solution was 4.3(+/-0.4) mmol/l sucrose, and the K(m) for the enzyme on sHA beads was 5.0(+/-1.0) mmol/l sucrose. The ability of the GtfSs glucan synthesized on the surface of sHA beads to support the adherence of oral bacteria was investigated. (3)H-thymidine-labeled bacteria (S. mutans GS-5, S. sobrinus 6715, S. sobrinus 6716, S. sanguis 10904, Actinomyces viscosus OMZ105E, A. viscosus 2085, and A. viscosus 2086) were incubated with sHA beads coated with GtfSs glucan. S. mutans GS-5 displayed the highest level of binding numerically. These results show that the GtfSs of S. sanguis is active on sHA beads, that the pH optimum for activity on a surface differs slightly from that in solution, and that its product glucan can support the adherence of oral microorganisms.

Vakil N. et al. *Clarithromycin-resistant Helicobacter pylori in patients with duodenal ulcer in the United States.* Am J Gastroenterol. 1998; 93(9) : 1432-5.p Abstract: BACKGROUND: Clarithromycin is a key component of several antimicrobial treatment regimens for Helicobacter pylori. Cure rates with clarithromycin-containing regimens are significantly decreased when resistance is present. Resistance develops by a point mutation in the ribosomal RNA of some organisms exposed to clarithromycin. We studied the prevalence of clarithromycin-resistant organisms in patients with duodenal ulcer in the United States from 1993-96. METHODS: Patients with endoscopic evidence of a duodenal ulcer were studied. Gastric biopsies were cultured for H. pylori and antimicrobial sensitivity was determined by the E-test (epsilometer agar diffusion gradient). RESULTS: In 1993-94, three of 78 patients (4%) had clarithromycin-resistant strains of H. pylori. In 1995-96, 44 of 348 patients (12.6%; p = 0.025) had resistant strains of H. pylori. Patients who had previously failed antimicrobial treatment for H. pylori accounted for much of the increase in resistant strains (25%). CONCLUSIONS: Failed therapy with clarithromycin-based regimens is a growing cause of antimicrobial resistance in H. pylori in the United States. Whereas the overall rates of primary resistance are low, the increase in secondary resistance over a short period of time is worrisome. New treatments that prevent the emergence of resistance may be important in the future.

Valdezate S. et al. *Evaluation of phenotypic and genotypic markers for characterisation of the emerging gastroenteritis pathogen Salmonella hadar.* Eur J Clin Microbiol Infect Dis. 2000; 19(4) : 275-81.p Abstract: Over the last 4 years Salmonella hadar has increasingly been isolated in Europe in conjunction with food-borne gastroenteritis. The aim of this study was to evaluate epidemiological methods (phage typing, antimicrobial susceptibility testing, DNA plasmid analysis, ribotyping and pulsed-field gel electrophoresis analysis) for characterising Salmonella hadar isolates. The 100% phage typeability of isolates and the high discriminatory index of 0.8856 suggest that phage typing is the method of choice. In order to obtain subdivisions of the most frequent Salmonella hadar phage types, a combination of molecular methods, such as ribotyping performed with Bg/I and EcoRI or pulsed-field gel electrophoresis using XbaI and XhoI, would be desirable as the usefulness of each technique varies with the phage type being analysed. Of note was the high (86%) rate of resistance to tetracycline and nalidixic acid but full susceptibility to ciprofloxacin in the strains studied.

Valdivieso F. et al. *[Antimicrobial resistance of agents causing urinary tract infections in 11 Chilean hospitals. PRONARES project].* Rev Med Chil. 1999; 127(9) : 1033-40.p Abstract: BACKGROUND: The computer program WHONET generates a common database to analyze local or general antimicrobial resistance of bacteria. A surveillance of agents causing urinary tract infections in Chile has been performed using this program. AIM: To report the results after 12 months of urinary tract infection agent surveillance. MATERIAL AND METHODS: Since November, 1997, a surveillance of in vitro antimicrobial resistance, using agar diffusion techniques, has been performed in 20 to 40 bacterial strains per month, isolated from 11 hospitals in the country. Results have been analyzed using WHONET program. RESULTS: In first 12 months, 3144 strains, 1625 coming from outpatients, have been studied. Seventy four percent of isolated strains were E coli, 19% were other enterobacteria, 4.1% were non fermenting bacilli and 2.1% were Gram (+) cocci. Sixty five percent of E coli strains were resistant to ampicillin, 11% to cefazolin, 2.5% to cefuroxime, 19% to ceftriaxone, 9% to ceftazidime, 4.2% to gentamicin 1.3% to amikacin, 5.6% to ciprofloxacin, 8.4% to grepafloxacin, 4.3% to nitrofurantoin and 43% to trimeproprim/sulphamethoxazole. Eighty two percent of other enterobacteria strains were resistant to ampicillin, 45.5% to cefazolin, 33.5% to cefuroxime, 26.6% to ceftriaxone, 21.5% to ceftazidime, 30.3% to gentamicin 17.2% to amikacin, 21% to ciprofloxacin, 16.3% to grepafloxacin, 48.2% to nitrofurantoin and 44.6% to trimeproprim/sulphamethoxazole. There were differences in betalactamic resistance among hospitals. CONCLUSIONS: Noteworthy is the high resistance rates to third generation cephalosporins, evidenced when the new cutoff values for E coli and Klebsiella spp are used. This national surveillance provides updated information on antimicrobial resistance of agents causing urinary tract infections.

Valdivieso R. F. et al. *Resistencia a los antimicrobianos en agentes causantes de infección del tracto urinario en 11 hospitales chilenos: proyecto PRONARES.* Rev. méd. Chile. 1999; 127(9) : 1033-40.p Abstract: Background: the computer program WHONET generates a common database to analyze local or general antimicrobial resistance of bacteria. A surveillance of agents causing urinary tract infections in Chile has been performed using this program. Aim: to report the results after 12 months of urinary tract infection agent surveillance. Material and methods: since november, 1997, a surveillance of in vitro antimicrobial resistance, using agar diffusion techniques, has been performed in 20 to 40 bacterial strains per month, isolated from 11 hospitals in the country. Results have been analyzed using WHONET program. Results: in first 12 months, 3144 strains, 1625 coming from outpatients, have been studied. Seventy four percent of isolated strains were E. coli, 19 percent were other enterobacteria, 4.1 percent were non fermenting bacilli and 2.1 percent were Gram (+) cocci. Sixty five percent of E coli strains were resistant to ampicillin, 11 percent to cefazolin, 2.5 percent to cefuroxime, 19 percent to ceftriaxone, 9 percent to ceftazidime, 4.2 percent to gentamicin 1.3 percent to amikacin, 5.6 percent to ciprofloxacin, 8.4 percent to grepafloxacin, 4.3 percent to nitrofurantoin and 43 percent to trimeproprim/sulphamethoxazole. Eighty two percent of other enterobacteria strains were resistant to ampicillin, 45.5 percent to cefazolin, 33.5 percent to cefuroxime, 26.6 percent to ceftriaxone, 21.5 percent to ceftazidime, 30.3 percent to gentamicin 17.2 percent to amikacin, 21 percent to ciprofloxacin, 16.3 percent to grepafloxacin, 48.2 percent to nitrofurantoin and 44.6 percent to trimeproprim/sulphamethoxazole. There were differences in beta-

lactamic resistance among hospitals. Conclusions: noteworthy is the high resistance rates to third generation cephalosporins, evidenced when the new cutoff values for E coli and klebsiella spp are used. This national surveillance provides updated information on antimicrobial resistance of agents causing urinary tract infections (AU).

Valenta C. et al. *The antistaphylococcal effect of nisin in a suitable vehicle: a potential therapy for atopic dermatitis in man.* J Pharm Pharmacol. 1996; 48(9) : 988-91.p Abstract: Staphylococcus aureus plays a central role in the pathogenesis of atopic dermatitis and is the predominant microorganism both in the lesions and in adjacent clinically normal skin. Chronic infection might aggravate the underlying lesion and serve as a source for further S. aureus infection. Nisin is a non-toxic and non-irritant peptide with no antibiotic-like side effects. In this study the antistaphylococcal activity of nisin in six topical formulations was investigated in diffusion tests and is shown to depend both on the water content and on the technological system. Because topical products often adhere to the stratum corneum for only a short time, the kinetics of antimicrobial activity were examined using a membrane filter technique. Thirty minutes after nisin addition almost no living microorganisms were detectable in different aqueous samples. The results demonstrate the potential of nisin preparations as an alternative to common antibiotics in the treatment of S. aureus infections in atopic dermatitis.

Valero L.F. et al. *[The etiology of nosocomial infection in surgery: comparison of 2 years (1988 and 1996)].* Enferm Infecc Microbiol Clin. 1998; 16(2) : 79-82.p Abstract: BACKGROUND: Nosocomial infections (NI) make up an important problem in Public Health Care. From an etiologic point of view they are characterized by their constant evolution over time. Thus, the aim of this study was to know the etiologic variations of NI in the surgery departments of a university hospital. MATERIAL AND METHODS: Active surveillance of NI in the departments of general, vascular and urologic surgery was undertaken in 1988 and 1996. The frequency of the presentation of different microorganisms was globally calculated and based on the localization of the infection. RESULTS: At present, the most important microorganisms were E. coli (20.6%), Enterococcus sp. (15.6%), S. epidermidis (8.8%), Streptococcus sp. (8.5%), other negative coagulase staphylococci (NCS) (5.7%), Pseudomonas sp. (5.5%), S. aureus (5.2%), and Candida sp. (4.3%). On analysis of the temporal evolution an increase was observed in gram positives (27.4% in 1988 and 46.4% in 1996). Enterococcus sp. increased in surgical infections (5.8% in 1988 and 15.8% in 1996) and in the urinary tract (8.5% in 1988 and 25.6% in 1996). Contrary to the S. epidermidis, the NCS increased in importance mainly in infections at the site of surgery (0% in 1988 to 5.1% in 1996). The appearance of Klebsiella sp., Enterobacter sp. and Proteus sp. decreased. CONCLUSIONS: A great variation was observed in the etiology of nosocomial infections in surgery departments not only over time but also based on the localization of the infection. In recent years gram positive infections have increased with a rise in the incidence of staphylococci, streptococci and enterococci, in addition to greater protagonism by Candida sp.

Vallee J.N. et al. *Superselective ophthalmic arterial fibrinolysis with urokinase for recent severe central retinal venous occlusion: initial experience.* Radiology. 2000; 216(1) : 47-53.p Abstract: PURPOSE: To investigate the effects of local ophthalmic arterial fibrinolysis on central retinal venous occlusion (CRVO). MATERIALS AND METHODS: Thirteen patients had recent severe nonischemic CRVO for which no alternative therapy was available. A flow-guide microcatheter was introduced coaxially via the femoral artery into the ophthalmic arterial ostium, and urokinase was perfused for 40 minutes. Vision, funduscopic findings, and retinal perfusion were assessed during 1 year of follow-up. RESULTS: Five of the 13 patients treated experienced visual improvement (P =.05) and retinal perfusion within 24-48 hours. Vision returned to normal within 24-48 hours in three patients, within 1 week in one patient, and within 1 month in one patient. These five patients exhibited progressive lesion regression within 2-4 weeks at funduscopy. Their clinical course prior to treatment resembled that of combined central retinal arterial occlusion (CRAO) and CRVO, which typically has a poor visual outcome. One patient relapsed 1 month after fibrinolysis. Of the remaining eight patients, one had normal vision at 12 months, and seven had no improvement. No technical complications were observed. CONCLUSION: Although there was no control group, the short period between fibrinolysis and substantial visual improvement, combined with marked retinal perfusion improvement, suggests that fibrinolysis is beneficial for CRVO, especially for recent CRAO and CRVO.

Van Bambeke F. et al. *Antibiotic efflux pumps.* Biochem Pharmacol. 2000; 60(4) : 457-70.p Abstract: Active efflux from procaryotic as well as eucaryotic cells strongly modulates the activity of a large number of antibiotics. Effective antibiotic transport has now been observed for many classes of drug efflux pumps. Thus, within the group of primary active transporters, predominant in eucaryotes, six families belonging to the ATP-binding cassette superfamily, and including the P-glycoprotein in the MDR (Multi Drug Resistance) group and the MRP (Multidrug Resistance Protein), have been recognized as being responsible for antibiotic efflux. Within the class of secondary active transporters (antiports, symports, and uniports), ten families of antibiotic efflux pumps have been described, distributed in five superfamilies [SMR (Small Multidrug Resistance), MET (Multidrug Endosomal Transporter), MAR (Multi Antimicrobial Resistance), RND (Resistance Nodulation Division), and MFS (Major Facilitator Superfamily)]. Nowadays antibiotic efflux pumps are believed to contribute significantly to acquired bacterial resistance because of the very broad variety of substrates they recognize, their expression in important pathogens, and their cooperation with other mechanisms of resistance. Their presence also explains high-level intrinsic resistances found in specific organisms. Stable mutations in regulatory genes can produce phenotypes of irreversible multidrug resistance. In eucaryotes, antibiotic efflux pumps modulate the accumulation of antimicrobials in phagocytic cells and play major roles in their transepithelial transport. The existence of antibiotic efflux pumps, and their impact on therapy, must now be taken fully into account for the selection of novel antimicrobials. The design of specific, potent inhibitors appears to be an important goal for the improved control of infectious diseases in the near future.

van Belkum A. et al. *Polymerase chain reaction-mediated typing of microorganisms: tracking dissemination of genes and genomes.* Electrophoresis. 1998; 19(4) : 602-7.p Abstract: The polymerase chain reaction (PCR) is a powerful molecular biology tool which can be used for the identification of species and strains of diverse microorganisms. By aimed amplification of characteristic genes (i.e., genes encoding ribosomal RNA molecules) and subsequent genetic analysis of amplified fragments, information on microbiological systematics and phylogeny can be obtained in a fast and efficient manner. Similar types of gene identification can be used to verify or detect genes responsible for phenotypic characteristics, whereas modified forms of the PCR enable whole genome searches for genetic polymorphisms among strains of a given species. In medical sciences, both strategies, gene and genome variability analysis by PCR, have an increasing impact on the study of the spread of especially those microbes that are multiply resistant to clinically used antibiotics. In this communication we will exemplify the usefulness of PCR-mediated typing of microorganisms from a clinical perspective while focusing on gene- versus genome-scanning. Special emphasis will be placed on analysis of the dissemination and characteristics of methicillin-resistant Staphylococcus aureus (MRSA) strains and bacterial factors providing resistance to penicillin and other beta-lactam antibiotics. Technical limitations and possibilities for improvement will be discussed.

Van Belkum A. et al. *Nucleic acid amplification and related techniques in microbiological diagnostics and epidemiology.* Cell Mol Biol (Noisy-le-

grand). 1995; 41(5) : 615-23.p Abstract: The use of nucleic acid amplification techniques within the medical microbiology laboratory is becoming more and more accepted. Polymerase chain reaction (PCR) tests or nucleic acid sequence based amplification (NASBA) assays are already available in the form of commercial kits. Although the technology has been adapted for application in a routine diagnostic setting, some of the systems' characteristics are still amenable to improvement. In this communication several of these aspects will be discussed. Reproducibility of DNA amplification mediated diagnostics and quality control of tests aiming at detection or genetic typing of both viral and bacterial microorganisms, will be discussed. This will be exemplified by the results obtained in multicenter studies on PCR diagnostics of the hepatitis viruses HBV and HCV and by data gathered in the course of PCR mediated DNA fingerprinting of Staphylococcus aureus strains, also performed in different institutes. Application of related techniques such as direct sequencing of amplified (c)DNA or the development of species-specific DNA probes will be described.

van de Leur J.J. et al. *Influence of low dose ciprofloxacin on microbial colonization of the digestive tract in healthy volunteers during normal and during impaired colonization resistance.* Scand J Infect Dis. 1997; 29(3) : 297-300.p Abstract: Ciprofloxacin in low doses is, in volunteers, effective for decontaminating the digestive tract [elimination of aerobic Gram-negative bacilli (GNB)] without disturbing colonization resistance. Before using this concept in neutropenic patients, we investigated if a low dose quinolone is still effective when the colonization resistance is disturbed by another antimicrobial agent. Ciprofloxacin 20 mg daily was effective in eliminating Gram-negative bacilli from the digestive tract in 4/5 volunteers, in 1 volunteer the GNB persisted in low concentration. No colonization with exogenous resistant GNB occurred. Following impairment of colonization resistance by addition of clindamycin 300 mg daily, 3/5 volunteers became colonized by spontaneously acquired exogenous GNB resistant to ciprofloxacin. We conclude that selective decontamination with a quinolone in low dosage cannot be recommended in neutropenic patients because there is, in the case of disturbed colonization resistance, a real risk of acquisition of quinolone-resistant strains.

van den Bogaard A.E. et al. *Antibiotic usage in animals: impact on bacterial resistance and public health.* Drugs. 1999; 58(4) : 589-607.p Abstract: Antibiotic use whether for therapy or prevention of bacterial diseases, or as performance enhancers will result in antibiotic resistant micro-organisms, not only among pathogens but also among bacteria of the endogenous microflora of animals. The extent to which antibiotic use in animals will contribute to the antibiotic resistance in humans is still under much debate. In addition to the veterinary use of antibiotics, the use of these agents as antimicrobial growth promoters (AGP) greatly influences the prevalence of resistance in animal bacteria and a poses risk factor for the emergence of antibiotic resistance in human pathogens. Antibiotic resistant bacteria such as Escherichia coli, Salmonella spp., Campylobacter spp. and enterococci from animals can colonise or infect the human population via contact (occupational exposure) or via the food chain. Moreover, resistance genes can be transferred from bacteria of animals to human pathogens in the intestinal flora of humans. In humans, the control of resistance is based on hygienic measures: prevention of cross contamination and a decrease in the usage of antibiotics. In food animals housed closely together, hygienic measures, such as prevention of oral-faecal contact, are not feasible. Therefore, diminishing the need for antibiotics is the only possible way of controlling resistance in large groups of animals. This can be achieved by improvement of animal husbandry systems, feed composition and eradication of or vaccination against infectious diseases. Moreover, abolishing the use of antibiotics as feed additives for growth promotion in animals bred as a food source for humans would decrease the use of antibiotics in animals on a worldwide scale by nearly 50%. This would not only diminish the public health risk of dissemination of resistant bacteria or resistant genes from animals to humans, but would also be of major importance in maintaining the efficacy of antibiotics in veterinary medicine.

van den Bogaard A.E. et al. *Epidemiology of resistance to antibiotics. Links between animals and humans.* Int J Antimicrob Agents. 2000; 14(4) : 327-35.p Abstract: An inevitable side effect of the use of antibiotics is the emergence and dissemination of resistant bacteria. Most retrospective and prospective studies show that after the introduction of an antibiotic not only the level of resistance of pathogenic bacteria, but also of commensal bacteria increases. Commensal bacteria constitute a reservior of resistance genes for (potentially) pathogenic bacteria. Their level of resistance is considered to be a good indicator for selection pressure by antibiotic use and for resistance problems to be expected in pathogens. Resistant commensal bacteria of food animals might contaminate, like zoonotic bacteria, meat (products) and so reach the intestinal tract of humans. Monitoring the prevalence of resistance in indicator bacteria such as faecal Escherichia coli and enterococci in different populations, animals, patients and healthy humans, makes it feasible to compare the prevalence of resistance and to detect transfer of resistant bacteria or resistance genes from animals to humans and vice versa. Only in countries that use or used avoparcin (a glycopeptide antibiotic, like vancomycin) as antimicrobial growth promoter (AMGP), is vancomycin resistance common in intestinal enterococci, not only in exposed animals, but also in the human population outside hospitals. Resistance genes against antibiotics, that are or have only been used in animals, i.e. nourseothricin, apramycin etc. were found soon after their introduction, not only in animal bacteria but also in the commensal flora of humans, in zoonotic pathogens like salmonellae, but also in strictly human pathogens, like shigellae. This makes it clear that not only clonal spread of resistant strains occurs, but also transfer of resistance genes between human and animal bacteria. Moreover, since the EU ban of avoparcin, a significant decrease has been observed in several European countries in the prevalence of vancomycin resistant enterococci in meat (products), in faecal samples of food animals and healthy humans, which underlines the role of antimicrobial usage in food animals in the selection of bacterial resistance and the transport of these resistances via the food chain to humans. To safeguard public health, the selection and dissemination of resistant bacteria from animals should be controlled. This can only be achieved by reducing the amounts of antibiotics used in animals. Discontinuing the practice of routinely adding AMGP to animal feeds would reduce the amounts of antibiotics used for animals in the EU by a minimum of 30% and in some member states even by 50%.

van der Hulst R.W. et al. *Treatment of Helicobacter pylori infection: a review of the world literature.* Helicobacter. 1996; 1(1) : 6-19.p Abstract: BACKGROUND: None of the currently used anti-Helicobacter pylori drug regimens cures the infection 100%, and cure results still vary considerably. The present article reviews the effectiveness of currently used antimicrobial regimens, aimed to cure H. pylori infection. METHODS: Data collection started from the beginning of the anti-H. pylori-therapy era until May 1995. No attempt at formal metanalysis has been made, because many studies have been published only in abstract form. Attempts were made to exclude duplicates of studies by comparison to previously reported ones; the authors of suspected duplicates were contacted. After amalgamation of the number of included patients and the number of successfully treated patients, the mean values of eradication rates and the 95% confidence intervals were calculated. RESULTS: A total of 237 treatment arms were analyzed. Bismuth triple therapy continues to reach high eradication rates worldwide (78-89%). Side effects leading to diminished patient compliance and the marked decline of eradication efficacy in cases of metronidazole resistance are considered to be the major drawbacks of this therapy. Proton pump inhibitor (PPI) dual therapy is better tolerated with fewer side effects than is bismuth triple therapy. The mean eradication rates vary from 55 to 75%, and the extremes lie between 24 and 93%. PPI triple therapies have been

shown to be very effective against H. pylori (eradication rates, 80-89%). Quadruple therapy leads to a mean eradication rate of 96%. CONCLUSION: Based on efficacy, PPI triple or bismuth triple therapy are recommended as first-line treatment for H. pylori infection. Quadruple therapy could serve as second-line treatment for eradication of initial failures and in case of metronidazole resistance.

van Duynhoven Y.T. et al. *Molecular epidemiology of infections with Neisseria gonorrhoeae among visitors to a sexually transmitted diseases clinic.* Sex Transm Dis. 1997; 24(7) : 409-17.p Abstract: OBJECTIVES: To identify determinants for plasmid-mediated resistance to penicillin (penicillinase-producing Neisseria gonorrhoeae [PPNG]) and tetracycline (tetracycline-resistant N. gonorrhoeae [TRNG]) among gonococci, to determine the distribution of bacterial characteristics, and to correlate these with antibiograms and patient characteristics. STUDY DESIGN: Gonococcal isolates from 131 patients attending a sexually transmitted diseases clinic in The Netherlands in 1994 were auxotyped and serotyped and antimicrobial susceptibility was tested. Information on patient characteristics was collected at the initial visit. RESULTS: The most prevalent serotype, IB-1 (26%), proved to be related to sexual contact with casual partners, especially commercial sex partners. In addition, IB-1 strains were associated with PPNG and displayed higher minimum inhibitory concentrations (MICs) for ceftriaxone, cefuroxime, and ciprofloxacin. Homosexual men were more often infected with nonrequiring, IB-2, and IB-6 strains than heterosexuals. These strains were very sensitive to ceftriaxone and ciprofloxacin. Overall, one strain showed decreased susceptibility to ciprofloxacin (MIC 0.5 microgram/ml), but no resistance to ceftriaxone, ciprofloxacin, or cefuroxime was observed. However, 31% of the isolates were TRNG, PPNG, or both. Determinants for these resistant strains among men were the use of antibiotics (odds ratio [OR] = 4.8, 90% confidence interval [CI] 1.3-19.1), Surinam or Morrocan origin (OR = 3.3, 90% CI 1.3-8.4), and homosexual contacts (OR = 0.1, 90% CI 0.03-0.4). CONCLUSIONS: Different types, with variable susceptibility, were associated with homosexual and commercial sexual behavior. PPNG and TRNG were more commonly isolated from antibiotic users, heterosexual individuals, and ethnic minorities. Continuous surveillance of susceptibility is needed to follow the spread of PPNG and TRNG and to detect resistance to the currently recommended agents in a timely fashion.

Van Dyck E. et al. *Increasing resistance of Neisseria gonorrhoeae in west and central Africa. Consequence on therapy of gonococcal infection.* Sex Transm Dis. 1997; 24(1) : 32-7.p Abstract: BACKGROUND AND OBJECTIVES: Antimicrobial resistant strains of Neisseria gonorrhoeae have spread with remarkable rapidity in many African countries. Chromosomal resistance to penicillin, tetracycline, and thiamphenicol is frequent now, and reported prevalences of penicillinase-producing N. gonorrhoeae isolates vary between 15% and 80%. Plasmid-mediated tetracycline-resistant N. gonorrhoeae isolates have been observed in several African countries. GOALS: To characterize gonococcal isolates from three sites in West and Central Africa, to determine antimicrobial susceptibility patterns, to document the spread of plasmid-mediated resistance to penicillin and tetracycline in these three sites, and to discuss the consequences of rising antimicrobial resistance on the management of gonococcal infection in Africa. STUDY DESIGN: Over time, a total of 2,288 gonococcal isolates were obtained from Abidjan, Ivory Coast (1992-1993, n = 251), from Kigali, Rwanda (1988-1993, n = 952), and from Kinshasa, Zaire (1988-1990, n = 1,085). The isolates were characterized by auxotyping and serotyping. Plasmid-mediated resistance to penicillin and to tetracycline was determined. Antimicrobial susceptibility testing to ceftriaxone, ciprofloxacin, penicillin, spectinomycin, tetracycline, and thiamphenicol was performed with an agar dilution method. RESULTS: The prevalence of penicillinase-producing N. gonorrhoeae increased significantly over time from 44% to 57% in Kigali and remained stable at a high level in Abidjan (73%) and in Kinshasa (67%). The frequency of tetracycline-resistant N. gonorrhoeae increased significantly during the observation periods in all three sites: from 20% to 65% in Abidjan, from 0% to 64% in Kigali, and from 14% to 41% in Kinshasa. Chromosomal resistance to penicillin was common in Kigali and Kinshasa, and chromosomal resistance to tetracycline and thiamphenicol was frequent in all three sites. All gonococcal isolates were susceptible to ceftriaxone, ciprofloxacin, and spectinomycin. Prototrophic and proline requiring strains were predominant, and IA-6 was the most common serovar in the three sites. IB-specific serovars were more common among penicillinase-producing N. gonorrhoeae and IA-specific serovars were more frequent among tetracycline-resistant N. gonorrhoeae, but there was no evidence for a clonal spread of resistant strains. CONCLUSIONS: This study illustrates the high frequency of resistant gonococci in Africa and shows that tetracycline-resistant N. gonorrhoeae have become highly endemic in different geographic areas of the continent. The use of effective drugs is essential to reduce gonorrhea transmission. Surveillance of temporal changes in antimicrobial resistance in gonococcal strain populations should be part of sexually transmitted diseases control programs.

Van Dyck E. et al. *Epidemic spread of plasmid-mediated tetracycline resistant Neisseria gonorrhoeae in Zaire.* Int J STD AIDS. 1995; 6(5) : 345-7.p Abstract: A cohort of 650 prostitutes from Kinshasa, Zaire, was followed at monthly intervals for sexually transmitted diseases as part of an HIV intervention project. Neisseria gonorrhoeae isolates, obtained during a period of 30 months, were auxotyped, serotyped and tested for antimicrobial susceptibility. Among 1085 gonococcal isolates tested, 725 (67%) produced beta-lactamase (PPNG) and 323 (30%) showed plasmid-mediated resistance to tetracyline (TRNG). Over time, the prevalence of PPNG varied between 60 and 73%, while the level of TRNG increased from 11 to 45%.

van Hoogmoed C.G. et al. *Inhibition of Streptococcus mutans NS adhesion to glass with and without a salivary conditioning film by biosurfactant- releasing Streptococcus mitis strains.* Appl Environ Microbiol. 2000; 66(2) : 659-63.p Abstract: The release of biosurfactants by adhering microorganisms as a defense mechanism against other colonizing strains on the same substratum surface has been described previously for probiotic bacteria in the urogenital tract, the intestines, and the oropharynx but not for microorganisms in the oral cavity. Two Streptococcus mitis strains (BA and BMS) released maximal amounts of biosurfactants when they were grown in the presence of sucrose and were harvested in the early stationary phase. The S. mitis biosurfactants reduced the surface tensions of aqueous solutions to about 30 to 40 mJ m(-2). Biochemical and physicochemical analyses revealed that the biosurfactants released were glycolipids. An acid-precipitated fraction was extremely surfactive and was identified as a rhamnolipidlike compound. In a parallel-plate flow chamber, the number of Streptococcus mutans NS cells adhering to glass with and without a salivary conditioning film in the presence of biosurfactant-releasing S. mitis BA and BMS (surface coverage, 1 to 4%) was significantly reduced compared with the number of S. mutans NS cells adhering to glass in the absence of S. mitis. S. mutans NS adhesion in the presence of non-biosurfactant-releasing S. mitis BA and BMS was not reduced at all. In addition, preadsorption of isolated S. mitis biosurfactants to glass drastically reduced the adhesion of S. mutans NS cells and the strength of their bonds to glass, as shown by the increased percentage of S. mutans NS cells detached by the passage of air bubbles through the flow chamber. Preadsorption of the acid-precipitated fraction inhibited S. mutans adhesion up to 80% in a dose-responsive manner. These observations indicate that S. mitis plays a protective role in the oral cavity and protects against colonization of saliva-coated surfaces by cariogenic S. mutans.

van Kasteren M.E. et al. *[Optimizing the antibiotics policy in the Netherlands. IV. SWAB- guidelines for antimicrobial therapy of adults with sepsis in hospitals. Foundation Antibiotics Policy Work Group (see comments)].* Ned Tijdschr Geneeskd. 1999; 143(12) : 611-7.p Abstract: The Stichting Werkgroep Antibioticabeleid (SWAB, Foundation

Antibiotic Policy Team) issued guidelines for empirical antimicrobial therapy in the hospital of sepsis in adults. A distinction is made between sepsis in patients with and patients without neutropenia. Patients without neutropenia are subdivided according to the setting where they contracted sepsis: at home, in the hospital or in the intensive-care unit. Because of the diversity in antibiotic spectrum of the different classes of cephalosporins, they can be used in all the categories of sepsis. The use of antibiotics with a very broad spectrum, like carbapenems and piperacillin-tazobactam, or antibiotics which can be applied in infections with microorganisms difficult to treat, like quinolones and glycopeptides, is limited in the empirical treatment of sepsis in order to combat development of resistance. It is crucial to streamline antibiotic therapy as soon as the causative agent of the sepsis is known; this includes choosing an antibiotic with the narrowest possible spectrum.

van Putten J.P. et al. *Natural proteoglycan receptor analogs determine the dynamics of Opa adhesin-mediated gonococcal infection of Chang epithelial cells.* Infect Immun. 1997; 65(12) : 5028-34.p Abstract: Many bacterial pathogens possess a complex machinery for the induction and/or secretion of factors that promote their uptake by mammalian cells. We searched for the molecular basis of the 60- to 90-min lag time in the interaction of Neisseria gonorrhoeae carrying the heparin-binding Opa adhesin with Chang epithelial cells. Infection assays in the presence of chloramphenicol demonstrated that the Opa-mediated gonococcal infection of Chang cells required bacterial protein synthesis when the microorganisms were derived from GC agar but not when grown in liquid media. Further analysis indicated that contact with agar ingredients rather than the growth state of the microorganisms determined the infection dynamics. DEAE chromatography of GC agar extracts and sodium dodecyl sulfate-polyacrylamide gel electrophoresis analyses and testing of collected fractions in infection assays identified negatively charged high-molecular-weight polysaccharides in the agar as inhibitors of the cellular infection. Electron microscopy showed that agar-grown gonococci were surrounded by a coat of alcian blue-positive material, probably representing accreted polysaccharides. Similar antiphagocytic material was isolated from bovine serum, indicating that in biological fluids gonococci producing the heparin-binding Opa adhesin may become covered with externally derived polysaccharides as well. Binding assays with gonococci and epithelial proteoglycan receptors revealed that polysaccharides derived from agar or serum compete with the proteoglycans for binding of the heparin-binding Opa adhesin and thus act as receptor analogs. Growth of gonococci in a polysaccharide-free environment resulted in optimal proteoglycan receptor binding and rapid bacterial entry into Chang cells. The recognition that gonococci with certain phenotypes can recruit surface polysaccharides that determine in vitro infection dynamics adds a different dimension to the well-recognized biological significance of genetic variation for this pathogen.

Van Rensburg C.E. et al. *An in vitro investigation of the bioactivities of ciprofloxacin and the new fluoroquinolone agents clinafloxacin (CI-960) and PD 131628 against Mycobacterium tuberculosis in human macrophages.* Chemotherapy. 1995; 41(4) : 234-8.p Abstract: In this study the intracellular bioactivity of ciprofloxacin and the new fluoroquinolone agents clinafloxacin (CI-960) and PD 131628 against Mycobacterium tuberculosis (H37Rv) was compared with rifampicin using human macrophages. Monocyte-derived macrophages were infected with M. tuberculosis in the presence of 10% autologous serum and treated with the antibiotics for 2 days, either immediately after infection or 3 days post-infection. The survival of the intracellular microorganisms was determined using the BACTEC tuberculosis system. Clinafloxacin, although not as active, compared favourably with rifampicin at concentrations ranging from 0.1 to 5 micrograms/ml in both systems, whereas PD 131628 performed reasonably well only when added directly after infection. However, ciprofloxacin was relatively unimpressive with intracellular bioactivity detected only with the highest concentration used (5 micrograms/ml). The ability of clinafloxacin, but not PD 131628, to inhibit mycobacteria after most of the organisms have escaped from the fused phagosomes emphasizes the importance of using a prolonged incubation time after infection when screening new antituberculosis drugs for intracellular bioactivity.

van Rensburg C.E. et al. *In vitro investigation of the antimicrobial activities of novel tetramethylpiperidine-substituted phenazines against Mycobacterium tuberculosis.* Chemotherapy. 2000; 46(1) : 43-8.p Abstract: The intra- and extracellular activities of 5 novel tetramethylpiperidine (TMP)-substituted phenazines against Mycobacterium tuberculosis H37Rv (ATCC 27294) were determined and compared with those of clofazimine and rifampicin. Two of these agents, together with clofazimine, were also tested for their activities against drug-resistant strains of M. tuberculosis. Three of the TMP-substituted phenazine compounds were significantly more active than clofazimine against M. tuberculosis, including multidrug-resistant clinical strains of this microbial pathogen, demonstrating a lack of cross-resistance between the riminophenazines and standard anti-tuberculous drugs. Using M. tuberculosis-infected monocyte-derived macrophages, all of the TMP-substituted phenazines were found to possess intracellular activity which was superior to that of both clofazimine and rifampicin. In this model of intracellular bioactivity, the experimental compounds inhibited bacterial growth at concentrations which were approximately 10-fold lower than the corresponding minimal inhibitory concentration values obtained using conventional in vitro sensitivity testing procedures. These results demonstrate that the novel TMP phenazines are active against multidrug-resistant M. tuberculosis strains, and particularly effective intracellularly.

van Winkelhoff A.J. et al. *Antimicrobial resistance in the subgingival microflora in patients with adult periodontitis. A comparison between The Netherlands and Spain.* J Clin Periodontol. 2000; 27(2) : 79-86.p Abstract: BACKGROUND: The widespread use of antibiotics for prophylaxis and treatment of bacterial infections has lead to the emergence of resistant human pathogens. Great differences have been documented between European countries in the use of systemic antibiotics. In parallel, significant differences in levels of resistant pathogens have been documented. AIM: To investigate whether differences in antibiotic use influence the level of antimicrobial resistance of the subgingival microflora of untreated patients with adult periodontitis in The Netherlands and Spain. METHOD: Blood agar plates containing breakpoint concentrations of penicillin, amoxicillin, amoxicillin and clavunalate, metronidazole, erythromycin, azithromycin, clindamycin and tetracycline were used to determine the proportion of bacteria from the subgingival plaque that was resistant to these antibiotics. In the Spanish patients, statistically significant higher mean levels of resistance were found for penicillin, amoxicillin, metronidazole, clindamycin and tetracycline. The mean number of different bacterial species growing on the selective plates was higher in the Spanish patients, as was the % of resistant strains of most periodontal pathogens. A striking difference was observed in the frequency of occurrence of tetracycline-resistant periodontal pathogens. In Spain, 5 patients had > or =3 tetracycline resistant periodontal pathogens, whereas this was not observed in any of the Dutch patients. CONCLUSIONS: The widespread use of antibiotics in Spain is reflected in the level of resistance of the subgingival microflora of adult patients with periodontitis.

Vanhems P. et al. *Nosocomial pulmonary infection by antimicrobial-resistant bacteria of patients hospitalized in intensive care units: risk factors and survival.* J Hosp Infect. 2000; 45(2) : 98-106.p Abstract: The objectives of this study were to identify the risk factors of nosocomial pulmonary infection (NPI) in intensive care units (ICUs) associated with antimicrobial-resistant bacteria (NPI-ARB) and to compare survival after NPI-ARB with NPI due to antimicrobial-sensitive bacteria (NPI-ASB). We analysed data from a surveillance network monitoring nosocomial infections in 27 mixed ICUs in the south-

east of France. NPI surveillance data were recorded for 628 patients with documented NPI. The patients were stratified into 2 groups by type of pneumonia: NPI-ASB (445 patients) vs. NPI-ARB (183 patients). Variables associated with NPI-ARB were identified++ by multivariate logistic regression. Survival was calculated using the Kaplan-Meier method. A medical condition for ICU admission [odds ratio (OR) 1.98, 95% confidence interval (95% CI) 1.35-2.91], transfer from another hospital ward [OR 1.66, 95% CI (1.14-2.42)], a colonized central venous catheter [OR 3.47, 95% CI (1.46-8.21)], a stay of [eight days [OR 1.02, 95% CI (1.01-1. 05)] and mechanical ventilation [OR 2.10, 95% CI (1.31-3.36)] were independent risk factors of NPI-ARB. Median survival was 35 days after NPI-ARB and 32 days after NPI-ASB (P=0.92). Survival after bacterial NPI was not associated with antimicrobial susceptibility. Copyright 2000 The Hospital Infection Society.

Vannuffel P. et al. *Specific detection of methicillin-resistant Staphylococcus species by multiplex PCR*. J Clin Microbiol. 1995; 33(11) : 2864-7.p Abstract: In Staphylococcus aureus, mecA and femA are the genetic determinants of methicillin resistance. By using a multiplex PCR strategy, 310- and 686-bp regions of the mecA and femA genes, respectively, were coamplified to identify susceptible (lacking mecA) and resistant (mecA+) staphylococci and to differentiate S. aureus (femA+) from coagulase-negative staphylococci (lacking femA). A third staphylococcal genomic sequence, corresponding to IS431 and spanning 444 bp, was used as a PCR control. One hundred sixty-five staphylococcal strains were tested. All 72 methicillin-resistant strains were found to be mecA+, and 92 of the 93 susceptible isolates lacked mecA. Only one coagulase-negative Staphylococcus isolate carrying the mecA gene was highly susceptible to oxacillin. The femA determinant was a unique feature of S. aureus; it was found in 100% of the S. aureus strains tested but was undetectable in all of the coagulase-negative staphylococci tested. The possibility of directly detecting the mecA and femA genes in blood samples was also investigated. After two amplification steps, a sensitivity of 50 microorganisms per ml of freshly collected spiked blood was achieved. In conclusion, coamplification of mecA and femA determinants proved to be very reliable both for rapid detection of methicillin resistance and differential diagnosis between S. aureus and other staphylococci. This technique, which can be successfully performed with blood samples, could be a useful tool in the diagnosis and treatment monitoring of staphylococcal infections.

Varadarajan A. et al. *Synthesis, structural characterization and antimicrobial studies of 2,4-pentanedione derivatives. Part I.* Acta Pol Pharm. 1998; 55(2) : 137-41.p Abstract: The title compounds have been synthesized in good yields by the interaction of 2,3,4-pentanetrione-3-oxime with ethanedithioamide in 1:1, 1:2, and 2:2 mole proportions. The structures of these compounds have been elucidated from its physico-chemical and spectral data and by correlation with well-known products. Preliminary screening of these compounds for biological activity against several microorganisms has indicated that they are selective growth inhibitors of Mycobacterium tuberculosis in particular.

Vargas C.I.d. et al. *Susceptibilidad de aislamientos de Neisseria gonorrhoeae a la penicilina y a la tetraciclina*. Biomedica (Bogota). 1996; 16(3) : 212-16.p Abstract: La vigilancia de la susceptibilidad antimicrobiana de los aislamientos de Neisseria gonorrhoeae es necesaria, debido a la capacidad de este patógeno para desarrollar resistencia por varios mecanismos, con las consecuentes fallas en el tratamiento. En un trabajo anterior, realizado en el Laboratorio de Microbiología del Instituto Nacional de Salud, en el que se empleó la prueba de difusión de disco (Kirby-Bauer), se determinó en 43 aislamientos de N. gonorrheae no productores de beta-lactamasa, susceptibilidad intermedia a la penicilina en 42 y resistencia a la tetraciclina en 26. Por tal razón, se decidió establecer en todos los aislamientos de N. gonorrhoeae, remitidos al INS como parte del programa de red de ETS bacterianas, los niveles de resistencia a la penicilina y a la tetraciclina, expresados como la concentración inhibitoria mínima (CIM). De 100 aislamientos estudiados, 49 fueron no productores de beta-lactamasa (NPBL) y 51 productores (PBL). La CIM de la penicilina de los aislamientos NPBL fue menor o igual a 0,06 æg/mL (sensible) en 3; de 0,12-1 æg/mL (intermedia) en 41; y mayor o igual a 2 æg/mL en 5. La CIM de los aislamientos PBL se aló que 4 eran intermedios y 47 resistentes. La CIM de tetraciclina fue menor o igual a 0,25 æg/mL (sensible) en 4, de 0,5 a æg/mL (intermedia) en 18 y mayor o igual a 2 æg/mL (resistente) en 78. Los datos destacan la importancia de mantener la vigilancia de la resistencia de N. gonorrhoeae a estos antimicrobianos para que, con base en ellos, se replanteen los esquemas de tratamiento (AU).

Vartivarian S.E. et al. *Extracellular iron reductases: identification of a new class of enzymes by siderophore-producing microorganisms.* Arch Biochem Biophys. 1999; 364(1) : 75-82.p Abstract: This study identifies extracellular iron reductases in culture supernatant fluids of the siderophore-producing microorganisms Escherichia coli and Pseudomonas aeruginosa. These enzymes were constitutively produced and reduced and released iron from a variety of ferric chelators. Dialyzable cofactors, necessary for the transfer of electrons in the enzymatic reduction of iron, were identified. The reductases were sensitive to treatment with proteinase K and guanidine-HCl, were not associated with siderophore activity, and were apparently released from the cell as extracellular enzymes. The acquisition of 59Fe2+ by cell suspensions of E. coli and P. aeruginosa was saturable, suggesting that the ferrous iron generated by these reductases can be bound and transported. Salmonella typhimurium mutants feoB, tonB, entB, and entBfeoB, deficient in numerous known iron uptake pathways, were found to exhibit substantial extracellular iron-reducing activities over that of the parent. A hypothesis is proposed in which the extracellular iron reductases excreted by siderophore-producing microorganisms may be responsible for the mobilization of iron during conditions of iron repletion when siderophores are repressed and may also function in concert with siderophores during periods of iron starvation. Copyright 1999 Academic Press.

Vasiljevic M. et al. *[Antibiotic therapy in the treatment of inflammatory diseases in the minor pelvis]*. Srp Arh Celok Lek. 1996; 124(7-8) : 193-6.p Abstract: Pelvic inflammatory diseases are usually caused by sexually transmitted microorganisms, as are Neisseria gonorrhoeae and Chlamydia trachomatis, either alone or associated with endogenous flora of the lower genital tract, as with other gram-positive and gram-negative anaerobic and aerobic bacteria [1, 2]. SUBJECT: The aim of the study was to estimate the effect of three broad-spectrum combinations of antimicrobial therapy in the treatment of pelvic inflammatory diseases in hospitalized patients. MATERIAL AND METHODS: We analysed the therapeutic success of some antimicrobial therapies in 154 patients with pelvic inflammatory disease, who were treated in the Narodni Front Hospital of Gynaecology and Obstetrics in Belgrade, during 1992 and 1993. Three drug therapies were applied. The combination of Ceftriaxon plus Doxycycline was given to 51 women. Fifty five women were treated by a combination of Gentamycin plus Clidamycin, and 48 women were treated by a combination of Gentamycin and Metronidazole. RESULTS: The therapeutic success after the application of the three different antibiotic therapies was recorded in 139 of 154 women (90.26%). Of 136 patients with uncomplicated pelvic inflammatory diseases, the therapeutic success was noted in 129 (94.85%) individuals, while of 18 women with tubo-ovarian abscess therapeutic success was recorded in 10 (55.56%) patients. Of 51 women treated by the combination of Ceftriaxon plus Doxycycline, the therapeutic success was observed in 46 (90.19%) patients. Fifty five women treated by the combination of Gentamycin plus Clindamycin, the therapeutic success was noted in 50 (90.19%) subjects. Of 48 women, treated by the combination of Gentamycin plus Metronidazole, the therapeutic success was found in 43 (89.58%) women. No statistically significant difference was found among the applied antibiotic therapies ($p > 0.05$). Of 18 women with tubo-

ovarian abscess 8 were operated on. Of these 8 women in 6 patients hysterectomy with bilateral salpingo-oophorectomy was performed and in two women unilateral salpingo-oophorectomy was carried out. DISCUSSION: Pelvic inflammatory diseases are often of polymicrobial aetiology. In 43 patients we found two types of bacteria in the cervical culture. The therapeutic success was achieved by these three antibiotic therapies. It was 90.26%, the therapeutic success in the treatment of pelvic inflammatory diseases by Ceftriaxon plus Doxycycline was noted in 90.19% of patients. The therapeutic success of antibiotic therapy with Gentamycin plus Clindamycin was obtained in 90.91% of patients. The success of antibiotic therapy with Gentamycin plus Metronidazole was recorded in 89.59% of patients. Our results are similar to those of other authors [3, 4, 6, 7]. No statistically significant difference was found among the applied antibiotic therapies. CONCLUSION: An early diagnosis and an aggressive treatment may prevent serious sequelae of this increasingly common sexually transmitted disease. The antibiotics should be of antimicrobial broad spectrum. Good effects can be best reached by a combined antibiotic therapy. Duration of parenteral administration of antibiotics should be several days and for at least 48 hours after the patient's defervescence.

Vasquez A. et al. *Metronidazole and clarithromycin resistance in Helicobacter pylori determined by measuring MICs of antimicrobial agents in color indicator egg yolk agar in a miniwell format. The Gastrointestinal Physiology Working Group of Universidad Peruana Cayetano Heredia and the Johns Hopkins University.* J Clin Microbiol. 1996; 34(5) : 1232-4.p Abstract: Resistance of Helicobacter pylori to metronidazole often causes failure of commonly used combination drug treatment regimens. We determined the MICs of metronidazole and clarithromycin against 18 H. pylori strains from Peru using tetrazolium egg yolk (TEY) agar. The MIC results obtained by agar dilution with petri dishes were compared with the results found through a miniwell format. The results of the two protocols for measuring drug susceptibility differed by no more than 1 dilution in all cases. On TEY agar, bright-red H. pylori colonies were easy to identify against a yellow background. Sixty-one percent (11 of 18) of the strains were resistant to metronidazole (MIC, > or = 4 micrograms/ml) and 50% (9 of 18) were resistant to clarithromycin (MIC, > or = 0.125 micrograms/ml), whereas none (0 of 5) of the strains tested were resistant to tetracycline (MIC, > or = 1 micrograms/ml). Thus, the prevalence of metronidazole and clarithromycin resistance in Peru is higher than that in developed regions of the world. The miniwell plate with TEY agar allows easy H. pylori colony identification, requires about one-third less of the costly medium necessary for petri dish assaying, conserves space, and yields MICs equivalent to those with agar dilution in petri dishes.

Vásquez de Kartzow R. et al. *Susceptibilidad de aislamiento clínicos de Streptococcus pneumoniae en un hospital pediátrico.* Bol. méd. Hosp. Infant. Méx. 1995; 52(6) : 336-41.p Abstract: INTRODUCCION. Desde hace algún tiempo se ha reportado la aparición de cepas de Streptococcus pneumoniae resistentes o con sensibilidad intermedia a penicilina y a otros antibióticos con recuperación importante en la práctica clínica de muchos centros hospitalarios. Ante la ausencia de información en nuestro medio determinamos la susceptibilidad de aislamientos clínicos de S. pneumoniae a antimicrobianos de uso común. MATERIAL Y METODOS. En 88 cepas de S. pneumoniae aisladas de enero de 1991 a agosto de 1994 se determinó la susceptibilidad por el método de dilución en agar con el fin de detectar la concentración mínima inhibitoria (MIC) para 13 antimicrobianos de uso común. Se utilizó como control la cepa de S. pneumoniae ATCC 49619 y los valores de corte para MIC según las tablas de la NCCLS(National Committee for Clinical Laboratory Standars). RESULTADOS. Con esta metodología encontramos que de las cepas estudiadas 15 (17 por ciento) fueron resistentes a penicilina con MIC ò 2 ægm/mL, mientras que 24 (27.2 por ciento) tuvieron una susceptibilidad intermedia. Así mismo 11 812.5 por ciento) fueron resistentes a ampicilina 6 (8 por ciento), a clorafenicol 14 (15.9 por ciento y a trimetoprim-sulfametoxazol 49 (56 por ciento). Aunque no hubo cepas resistentes a cefotaxima, 4 (4.5 por ciento) exhibieron una susceptibilidad intermedia. Todas las cepas fueron susceptibles a vancomicina, amoxicilina y amoxicilina/clavulanato. CONCLUSIONES. La resistencia de S. pneumoniae a penicilina en las cepas probadas de nuestra institución es alta; sin embargo su implicación clínica no se ha establecido, por lo tanto es aventurado sugerir un cambio en los esquemas antimicrobianos habituales para este tipo de infecciones(AU).

Vassallo J. et al. *Mixed pulmonary infection with Nocardia, Candida, methicillin-resistant Staphylococcus aureus, and group D Streptococcus species.* Postgrad Med J. 1996; 72(853) : 680-1.p Abstract: A 67-year-old man on prednisolone and azathioprine for ulcerative colitis, developed severe pneumonia due to Nocardia otitidis caviarum, methicillin-resistant Staphylococcus aureus, a group D Streptococcus and Candida albicans. The patient responded well to aggressive antimicrobial therapy.

Vatopoulos A.C. et al. *Bacterial resistance to ciprofloxacin in Greece: results from the National Electronic Surveillance System. Greek Network for the Surveillance of Antimicrobial Resistance.* Emerg Infect Dis. 1999; 5(3) : 471-6.p Abstract: According to 1997 susceptibility data from the National Electronic System for the Surveillance of Antimicrobial Resistance, Greece has high rates of ciprofloxacin resistance. For most species, the frequency of ciprofloxacin-resistant isolates (from highest to lowest, by patient setting) was as follows: intensive care unit > surgical > medical > outpatient. Most ciprofloxacin-resistant strains were multidrug resistant.

Vatopoulos A.C. et al. *An electronic network for the surveillance of antimicrobial resistance in bacterial nosocomial isolates in Greece. The Greek Network for the Surveillance of Antimicrobial Resistance.* Bull World Health Organ. 1999; 77(7) : 595-601.p Abstract: The present article reports an evaluation of the national electronic network for the continuous monitoring of antimicrobial resistance in Greece. The network employs a common electronic code and data format and uses WHONET software. Our four years' experience with the network confirms its practicality. A total of 22 hospitals in Greece are currently using the software, of which 19 participate in the network. Analysis of the information obtained has greatly helped in identifying the main factors responsible for the emergence of antimicrobial resistance in the participating hospitals. The data collected have also helped to identify priorities for further investigation of the genetic and molecular mechanisms responsible for the emergence of resistance and facilitated development of hospital-based empirical therapy of infections. In conclusion, the implementation of national networks for the surveillance of antimicrobial resistance should be regarded as a priority.

Vatopoulos A.C. et al. *Risk factors for nosocomial infections caused by gram-negative bacilli. The Hellenic Antibiotic Resistance Study Group.* J Hosp Infect. 1996; 34(1) : 11-22.p Abstract: Two hundred and ninety-nine Gram-negative hospital-acquired infections from 257 patients, consecutively identified during one month (November 1992) in five hospitals in the greater Athens area, were divided into four groups on the basis of the bacterium isolated: Group 1 (Escherichia coli group) included infections owing to E. coli, Group 2 (Proteus group) consisted of infections owing to Proteus spp. and Providencia spp., Group 3 (Kiebsiella/Enterobacter group) involved infections owing to Kiebsiella spp., Enterobacter spp., Citrobacter spp. and Serratia spp. Infections owing to Pseudomonas spp. and other non-fermenters were allocated into Group 4 (non-fermenters group). The four groups were studied in relation to risk factors including the duration of hospitalization, type of ward, underlying disease, history of operation, medical procedures/devices and antimicrobial therapy. A stepwise multiple logistic regression technique (SPSS Inc) was used to analyse the data, and the three groups (the Proteus group, the

Klebsiella/Enterobacter group and the non-fermenters group) were analysed separately against the E. coli group. Infections with the Kiebsiella/Enterobacter group were associated with: (a) length of hospital stay before the infection, (b) treatment with newer antibiotics, and (c) hospitalization in an intensivecare unit (ICU). Infections with non-fermenters were associated with: (a) length of hospital stay before infection, (b) a urinary catheter, (c) type of disease (chronic infection being negatively associated), (d) treatment with newer antibiotics and (e) hospitalization in an ICU. Proteus group infections were associated with (a) length of hospital stay before infection, (b) treatment with newer antibiotics and (c) operation during present hospitalization (negative association). Interestingly, no specific hospitals were identified as risk factors. Identification of patients at risk for acquiring an infection owing to a nosocomial pathogen is vital in the development of a preventive strategy for hospital-acquired infections.

Veber B. et al. *Comparison of direct examination of three types of bronchoscopy specimens used to diagnose nosocomial pneumonia*. Crit Care Med. 2000; 28(4) : 962-8.p Abstract: OBJECTIVE: To compare direct examination of bronchial aspirate and plugged telescopic catheter specimens (PTC) with infected cell counts in bronchoalveolar lavage (BAL) specimens for the diagnosis of nosocomial pneumonia. DESIGN: Prospective study of critically ill patients. SETTING: Intensive care unit in a university hospital. PATIENTS: A total of 64 patients hospitalized for >48 hrs with suspected nosocomial pneumonia. INTERVENTIONS: Fiberoptic bronchoscopy with bronchial aspirate and quantitative protected specimen brush, PTC, and BAL cultures. PTC and bronchial aspirate specimens were Gram-stained. BAL specimens for infected cell counts were examined as described previously in the literature. MEASUREMENTS AND MAIN RESULTS: Nosocomial pneumonia was diagnosed by the medical staff based on all available clinical, radiologic, laboratory test, and microbiological data and on the course before and after appropriate therapy. A total of 71% of patients were ventilated, and 70.1% were receiving antibiotics. Nosocomial pneumonia was diagnosed in 54% of the cases. On direct examination, sensitivity (Se) and specificity (Sp) of bronchial aspirate specimens were Se, 82% and Sp, 60%; of BAL with 5% infected cells, Se, 56% and Sp, 100%; of BAL with 3% infected cells, Se, 74% and Sp, 96%; of PTC specimens, Se, 65% and Sp, 76%; and of PTC specimens plus BAL with 3% infected cells, Se, 83% and Sp, 78%. BAL with 3% infected cells was significantly better for predicting nosocomial pneumonia than direct examination of bronchial aspirate or PTC specimens (p =.0012). When the BAL showed 3% infected cells, neither direct examination of bronchial aspirate nor direct examination of PTC specimens was useful (p =.24 and p =.38, respectively). Combined use of direct examination of PTC specimens plus BAL with 3% infected cells markedly improved sensitivity. The total cost of each procedure was taken into account for the final evaluation. CONCLUSIONS: Our data suggest that BAL with 3% infected cells is currently the only test whose predictive value for nosocomial pneumonia is sufficiently high to be of use for guiding the initial choice of antimicrobial class while waiting for quantitative culture results.

Veiko V.P. et al. *[Protein engineering of uridine phosphorylase from Escherichia coli K-12. I. Cloning and expression of uridine phosphorylase genes from Klebsiella aerogenes and Salmonella typhimurium in E. coli]*. Bioorg Khim. 1998; 24(5) : 381-7.p Abstract: Genes of uridine phosphorylases (udp) from Klebsiella aerogenes and Salmonella typhimurium were cloned and expressed. Highly effective producer strains of the corresponding proteins were constructed. Enzymic properties of the UPases obtained were studied and compared with those from the Escherichia coli enzyme. Mutant forms of UPase from E. coli (D5E, D5N, D5A) were prepared by site-directed mutagenesis techniques. It was shown that the Asp5 residue plays an insignificant role in the formation of the active form of the protein.

Velasco E. et al. *Risk index for prediction of surgical site infection after oncology operations.* Am J Infect Control. 1998; 26(3) : 217-23.p Abstract: INTRODUCTION: Several studies have shown that surgical site infections represent most hospital-acquired infections, with the major impact being on average hospital stay and cost of hospitalization. METHODS: To develop a risk model for prediction of surgical site infections in cancer patients undergoing operative procedures and identify those with high probability of infection we performed a prospective cohort study in a tertiary cancer care hospital in Rio de Janeiro, Brazil. Risk factors were studied in single and multivariate analyses. RESULTS: Over a 24-month period, 1205 patients underwent operations for malignant disease. The overall surgical site infection rate was 17.3%. A multivariate stepwise logistic regression model identified six independent predictive risk factors: contaminated and infected operations, surgical duration greater than 280 minutes, male sex, prior radiotherapy, American Society of Anesthesiology class III to V, and antimicrobial prophylaxis not according to protocol. On the basis of individual risk scores, two groups of patients were identified: a low-risk (score < or = 8; surgical site infection rate 10%) and a high-risk group (score > or = 9; surgical site infection rate 33.6%; relative risk 3.4; 95% confidence interval 2.6 to 4.4). CONCLUSION: The oncology risk model allowed for the identification of a high-risk score group of patients and implementation of a more efficient and selective intervention program.

Velasco M. et al. *Simultaneous intestinal leishmaniasis and mycobacterial involvement in a patient with acquired immune deficiency syndrome.* J Clin Gastroenterol. 1998; 27(3) : 271-3.p Abstract: Gastrointestinal involvement is reported in approximately 50% to 93% of patients with human immunodeficiency virus. It is frequently the result of coinfection with several microorganisms. Selective Leishmania intestinal involvement presents with atypical symptoms for visceral leishmaniasis, and may appear as a relapse or as the first manifestation of the disease. The authors present a patient with acquired immune deficiency syndrome who has a history of treated leishmaniasis and gastrointestinal infection by showed Mycobacterium avium intracellulare (MAI). After the new onset of abdominal pain, an intestinal biopsy showed the presence of both MAI and Leishmania in duodenum. Intestinal infection by Leishmania must be included in the differential diagnosis in patients with a previous history of leishmaniasis or travel to an endemic area.

Velazquez J.B. et al. *Incidence and transmission of antibiotic resistance in Campylobacter jejuni and Campylobacter coli*. J Antimicrob Chemother. 1995; 35(1) : 173-8.p Abstract: One-hundred and two Campylobacter clinical isolates were characterized for their in-vitro resistance to erythromycin (1.9%), three fluoroquinolones (31.3-34.3%), tetracycline (43.1%), kanamycin (4.8%), ampicillin (18.6%) and other 16 antimicrobial agents. Conjugative transfer of tetracycline and kanamycin resistances among these strains was achieved and small plasmids of 4.3, 4 and 1.9 kb were observed in kanamycin-resistant Campylobacter coli strains.

Venu R.P. et al. *Endoscopic transpapillary drainage of pancreatic abscess: technique and results.* Gastrointest Endosc. 2000; 51(4 Pt 1) : 391-5.p Abstract: BACKGROUND: Pancreatic abscess is one of the serious complications of acute pancreatitis. Traditionally, pancreatic abscess has been treated by operative drainage. Based on experience with endoscopic transpapillary drainage of pseudocysts, a similar technique was used in patients with pancreatic abscess. METHOD: Patients were evaluated by endoscopic retrograde cholangiopancreatography. In those with pancreatic abscess communicating with the main pancreatic duct, pancreatic sphincterotomy, saline irrigation of the abscess cavity, and catheter dilation followed by 10F pancreatic stent placement were done. Instillation of gentamicin and nasopancreatic catheter drainage were used in difficult cases. RESULTS: Of 22 patients with pancreatic abscess, 11 underwent endoscopic transpapillary drainage with technical success in 10 patients (90%); 8 patients (74%) had resolution of pancreatic abscess, clinically and

radiographically. Intracavitary instillation of gentamicin and nasopancreatic catheter drainage were used in 2 patients. Two patients in whom endoscopic transpapillary drainage failed underwent operative drainage with a favorable outcome, and the one patient in whom endoscopic treatment was technically unsuccessful underwent successful percutaneous drainage. One patient had mild pancreatitis. CONCLUSION: Endoscopic transpapillary drainage is an effective nonoperative therapy for selected cases of pancreatic abscess and is associated with minimal morbidity and no mortality.

Vera-Cruz P. et al. *Acute mastoiditis in children—our experience.* Int J Pediatr Otorhinolaryngol. 1999; 50(2) : 113-7.p Abstract: The incidence of acute mastoiditis and the number of complications has changed since the 1950s, despite the increasing antibiotic effectiveness. Other series concluded that the incidence of acute mastoiditis is rising in the recent years, which can be justified by the antibiotic resistance of the microorganisms and the absence of paracentesis in the treatment of acute otitis media. Our aim is to approach risk factors, clinical presentation, diagnosis and treatment of acute mastoiditis. We reviewed 62 clinical records of patients in pediatric age, observed in D. Estefania Hospital Lisbon, between January 1993 and December 1997. There was a relative homogenous distribution during the 5 years of the study period. The patient age ranged from 5 months to 14 years. They all were treated with intravenous antibiotics. The mean duration of treatment was 7.4 days. We registered 15 complications: 14 retroauricular subperiosteal abscesses and one subdural empyema. The most common isolated microorganism was Streptococcus pneumoniae. We found no statistic difference ($P > 0.1$) in the incidence of acute mastoiditis between the 5 years of the study.

Vercaigne L.M. et al. *Antibiotic-heparin lock: in vitro antibiotic stability combined with heparin in a central venous catheter.* Pharmacotherapy. 2000; 20(4) : 394-9.p Abstract: Long-term hemodialysis frequently requires vascular access through central venous catheters (CVCs). Infection related to these catheters is a significant complication. The use of an antibiotic-heparin lock could decrease the risks associated with infected permanent catheters. As an initial step in developing an antibiotic-heparin lock, we investigated the in vitro stability of antibiotic-heparin combinations in CVCs. Initially, cefazolin, vancomycin, ceftazidime, ciprofloxacin 10 mg/ml each, and gentamicin 5 mg/ml were incubated separately in glass test tubes in the dark at 37 degrees C for 72 hours. Samples were analyzed spectrophotometrically for stability at 24-hour intervals. The procedure was repeated with the addition of heparin (final concentration 5000 U/ml in glass test tubes), and the combination was also examined in CVCs. High-performance liquid chromatography analysis was conducted on the antibiotic-heparin combinations at 72 hours to confirm the spectrophotometric results. Ciprofloxacin produced an immediate precipitate with the addition of heparin and was not analyzed further. Absorbance values decreased for all antibiotics, with the greatest decreases at 72 hours for cefazolin (27.4%), vancomycin (29.7%), ceftazidime (40.2%), and gentamicin (8%) when combined with heparin. These decreases were postulated to be secondary to adsorption of the antibiotics to the luminal surface of the catheters because submitting the catheters to ultrasound with 1% sodium bicarbonate and analyzing the resulting solution for absorbance revealed that some of the drug was recovered. Although free antibiotic in CVC solution was reduced, the concentration should be sufficient (approximately 5 mg/ml) to decrease the frequency of infections associated with CVCs. We conclude that the concentrations of vancomycin, ceftazidime, cefazolin, or gentamicin used in our study should be sufficient for an antibiotic-heparin lock.

Verghese S.T. et al. *Comparison of three techniques for internal jugular vein cannulation in infants.* Paediatr Anaesth. 2000; 10(5) : 505-11.p Abstract: Central venous cannulation allows accurate monitoring of right atrial pressure and infusion of drugs during the anaesthetic management of infants undergoing cardiopulmonary bypass. In this prospective, randomized study, we compared the success and speed of cannulation of the internal jugular vein in 45 infants weighing less than 10 kg using three modes of identification: auditory signals from internal ultrasound (SmartNeedle, SM), external ultrasound imaging (Imaging Method, IM) and the traditional palpation of the carotid pulsation and other landmarks (Landmarks Method, LM). The cannulation time, number of attempts with LM and SM techniques were greater than those with IM technique. The incidence of carotid artery puncture and the success rate were not significantly different among the three groups. In infants, a method based on visual ultrasound identification (IM) of the internal jugular vein is more precise and efficient than methods based on auditory (SM) and tactile perception (LM).

Vergis E.N. et al. *Azithromycin vs cefuroxime plus erythromycin for empirical treatment of community-acquired pneumonia in hospitalized patients: a prospective, randomized, multicenter trial.* Arch Intern Med. 2000; 160(9) : 1294-300.p Abstract: OBJECTIVE: To compare the efficacy and safety of azithromycin dihydrate monotherapy with those of a combination of cefuroxime axetil plus erythromycin as empirical therapy for community-acquired pneumonia in hospitalized patients. METHODS: Patients were enrolled in a prospective, randomized, multicenter study. The standard therapy of cefuroxime plus erythromycin was consistent with the American Thoracic Society, Canadian Community-Acquired Pneumonia Consensus Group, and Infectious Disease Society of America consensus guidelines. The doses were intravenous azithromycin (500 mg once daily) followed by oral azithromycin (500 mg once daily), intravenous cefuroxime (750 mg every 8 hours), followed by oral cefuroxime axetil (500 mg twice daily), and erythromycin (500-1000 mg) intravenously or orally every 6 hours. Randomization was stratified by severity of illness and age. Patients who were immunosuppressed or residing in nursing homes were excluded. RESULTS: Data from 145 patients (67 received azithromycin and 78 received cefuroxime plus erythromycin) were evaluable. Streptococcus pneumoniae and Haemophilus influenzae were isolated in 19% (28/145) and 13% (19/145), respectively. The atypical pathogens accounted for 33% (48/145) of the etiologic diagnoses; Legionella pneumophila, Chlamydia pneumoniae, and Mycoplasma pneumoniae were identified in 14% (20/ 145), 10% (15/145), and 9% (13/145), respectively. Clinical cure was achieved in 91% (61/67) of the patients in the azithromycin group and 91% (71/78) in the cefuroxime plus erythromycin group. Adverse events (intravenous catheter site reactions, gastrointestinal tract disturbances) were significantly more common in patients who received cefuroxime plus erythromycin (49% [30/78]) than in patients who received azithromycin (12% [8/67]) ($P<.001$). CONCLUSIONS: Treatment with azithromycin was as effective as cefuroxime plus erythromycin in the empirical management of community-acquired pneumonia in immunocompetent patients who were hospitalized. Azithromycin was well tolerated.

Verhaegen J. et al. *Capsular types and antibiotic susceptibility of pneumococci isolated from patients in Belgium with serious infections, 1980-1993.* Clin Infect Dis. 1995; 20(5) : 1339-45.p Abstract: During the 13-year period from 1 November 1980 to 31 January 1993, we received and serotyped a total of 5,619 clinically significant strains of Streptococcus pneumoniae isolated in more than 75 laboratories in Belgium (4,079 [72.6%] were from blood or pleural fluid, 462 [8.2%] were from cerebrospinal fluid, 691 [12.3%] were from middle ear aspirates, and 387 [6.8%] were from various other body fluids). The isolates belonged to 64 of the 84 currently recognized serotypes. Among the 4,722 isolates tested for susceptibility since 1983, 22% were resistant to at least one antimicrobial agent. Resistance to penicillin has slowly increased since 1985 but remained stable at a level of 2%-4% between 1986 and 1993. Of the 119 isolates with reduced penicillin susceptibility, only 23 were fully resistant (MIC, > or = 2 micrograms/mL) and none of these proved to be resistant to cephalosporins. Resistance to erythromycin increased significantly from 5.2% in 1986 to 21.5% in 1993. Resistance to penicillin and erythromycin was also more frequently recognized in a smaller number of capsular types of S. pneumoniae.

Vermelho L.L. et al. *Mortalidade de jovens: análise do período de 1930 a 1991 (a transição epidemiológica para a violência).* Rev. saúde pública. 1996; 30(4) : 319-31.p Abstract: Estuda a mortalidade de jovens (15 a 24 anos) das cidades do Rio de Janeiro e São Paulo, no período de 1930 a 1991, para avaliação das mudanças no perfil baseado em causas de morte. Os resultados mostraram que São Paulo experimentou um declínio rápido das taxas até 1970, assim como o Rio de Janeiro, até 1980. A partir daí a tendência é crescente, determinada pela mortalidade masculina. O Rio de Janeiro apresentou índices mais elevados durante todo o período. Durante a última década, o percentual de aumento foi mais elevado em São Paulo, aproximando as taxas. As doenças infecciosas, especialmente as tuberculoses, foram responsáveis pela mortalidade elevada, principalmente até a década de 50. Após 1960, a transição se tornou evidente e as causas violentas passaram a ocupar a primeira posição, principalmente acidentes de trânsito e homicídios. Doenças cardiovasculares, respiratórias e, mais tarde, a AIDS, também se destacaram (AU).

Verran J. et al. *Pumice slurry as a crossinfection hazard in nonclinical (teaching) dental technology laboratories.* Int J Prosthodont. 1997; 10(3) : 283-6.p Abstract: This research sought to compare the microbiological status of pumice slurry in clinical and nonclinical dental laboratories. Samples were inoculated onto selective and nonselective media. Resultant colonies were counted and identified to genus or species level. In the nonclinical laboratory, counts were constant at approximately 10(7) to 10(8) cfu/g. Pseudomonads, staphylococci and Bacillus spp comprised the major pumice contaminants in both laboratories. It was concluded that nonclinical laboratories are not immune from the presence of potentially pathogenic microorganisms in pumice slurry. Disinfection reduces contamination by oral microorganisms.

Verwaest C. et al. *Randomized, controlled trial of selective digestive decontamination in 600 mechanically ventilated patients in a multidisciplinary intensive care unit.* Crit Care Med. 1997; 25(1) : 63-71.p Abstract: OBJECTIVE: To evaluate the efficacy of two regimens of selective decontamination of the digestive tract in mechanically ventilated patients. DESIGN: Prospective, randomized, concurrent trial. SETTING: Multidisciplinary intensive care unit (ICU) in a 1,800-bed university hospital. PATIENTS: Consecutive patients (n = 660) who were likely to require mechanical ventilation for at least 48 hrs were randomized to one of three groups: conventional antibiotic regimen (control group A); oral and enteral ofloxacin-amphotericin B (group B); and oral and enteral polymyxin E-tobramycin-amphotericin B (group C). Both treatment groups received systemic antibiotics for 4 days (ofloxacin in group B and cefotaxime in group C). INTERVENTIONS: Patients were randomized to receive standard treatment (control group A, n = 220), selective decontamination regimen B (group B, n = 220), and selective decontamination regimen C (group C, n = 220). After early deaths and exclusions from the study, 185 controls (group A) and 193 (group B)/200 (group C) selective decontamination regimen patients were available for analysis. MEASUREMENTS AND MAIN RESULTS: Measurements included colonization and primary/secondary infection rate, ICU mortality rate, emergence of antibiotic resistance, length of ICU stay, and antimicrobial agent costs. The study duration was 19 months. The patient groups were fully comparable for age, diagnostic category, and severity of illness. One third of patients in each group suffered a nosocomial infection at the time of admission. There was a significant difference between treatment group B and control group A in the number of infected patients (odds ratio of 0.42, 95% confidence interval of 0.27 to 0.64), secondary lower respiratory tract infection (odds ratio of 0.47, 95% confidence interval of 0.26 to 0.82), and urinary tract infection (odds ratio of 0.47, 95% confidence interval of 0.27 to 0.81). Significantly more Gram-positive bacteremias occurred in treatment group C vs. group A (odds ratio of 1.22, 95% confidence interval 0.72 to 2.08). Infection at the time of admission proved to be the most significant risk factor for subsequent infection in control and both treatment groups. ICU mortality rate was almost identical (group A 16.8%, group B 17.6%, and group C 15.5%) and was not significantly related to primary or secondary infection. Increased antimicrobial resistance was recorded in both treatment groups: tobramycin-resistant enterobacteriaceae (group C 48% vs. group A 14%, p <.01), ofloxacin-resistant enterobacteriaceae (group B 50% vs. group A 11%, p <.02), ofloxacin-resistant nonfermenters (group B 81% vs. group A 52%, p <.02), and methicillin-resistant Staphylococcus aureus (group C 83% vs. group A 55%, p <.05). Antimicrobial agent costs were comparable in control and group C patients; one third less was spent for group B patients. CONCLUSIONS: In cases of high colonization and infection rates at the time of ICU admission, the preventive benefit of selective decontamination is highly debatable. Emergence of multiple antibiotic-resistant microorganisms creates a clinical problem and a definite change in the ecology of environmental, colonizing, and infecting bacteria. The selection of multiple antibiotic-resistant Gram-positive cocci is particularly hazardous. No beneficial effect on survival is observed. Moreover, selective decontamination adds substantially to the cost of ICU care.

Verzasconi R. et al. *[Amoxicillin and clavulanic acid versus amoxicillin plus gentamicin in the empirical initial treatment of urinary tract infections in hospitalized patients].* Schweiz Med Wochenschr. 1995; 125(33) : 1533-9.p Abstract: We compared the fixed combination amoxicillin plus clavulanic acid with that of amoxicillin plus gentamicin in the empirical initial treatment of severe urinary tract infections. The study included 87 hospitalized patients (51 women and 36 men, mean age 58 +/- 22 years) with acute uncomplicated pyelonephritis (n = 48) or with complicated urinary tract infections (n = 39). 80 patients (92%) had fever and 31 patients (36%) positive blood cultures. 45 patients were randomly assigned to amoxicillin plus clavulanic acid and 42 to amoxicillin plus gentamicin. Overall, 18 patients (21%) were infected with organisms resistant in vitro to amoxicillin plus clavulanic acid, whereas no pathogen was isolated with resistance to amoxicillin plus gentamicin ($p < 0.0001$). At the end of the empirical treatment (4.2 +/- 1.5 days after the start), significant bacteriuria was present in 6/39 patients (15%) assigned to amoxicillin plus clavulanic acid, compared to 0/34 patients assigned to amoxicillin plus gentamicin ($p < 0.05$). The clinical response was satisfactory in both groups, and the time from start of therapy to resolution of fever was 2.2 +/- 1.4 days in the amoxicillin plus clavulanic acid group and 2.3 +/- 1.7 days in the amoxicillin plus gentamicin group. Although the in-vitro resistance did not result in a lower clinical efficacy of amoxicillin plus clavulanic acid compared to amoxicillin plus gentamicin in our relatively small sample of patients, the data indicate that the antimicrobial activity of amoxicillin plus clavulanic acid is inadequate to cover the spectrum of causative agents in hospitalized patients with pyelonephritis or complicated urinary tract infections. Amoxicillin plus clavulanic acid should therefore not be used in the initial empirical treatment of these infections.

Vidwans A. et al. *Diagnosis and management of spinal epidural space extravasation complicating percutaneous central venous line placement in a premature infant: case report and review of literature.* Conn Med. 2000; 64(2) : 79-82.p Abstract: Percutaneous central venous lines are commonly used to establish long-term venous access in the care of premature infants. Misplacement of these catheters can occur and may lead to significant morbidity and mortality. Here we report a very-low-birth-weight premature infant whose percutaneous central venous line was inadvertently placed into the spinal epidural space. The anatomical basis of this complication as well as a comprehensive review of literature are provided.

Vigil G.V. et al. *Identification and antibiotic sensitivity of bacteria isolated from periapical lesions.* J Endod. 1997; 23(2) : 110-4.p Abstract: Periradicular tissues from 28 refractory endodontic cases requiring surgical intervention were submitted for histological diagnosis and microbiological culture. Bacteria isolated from these lesions were identified and then tested for their antibiotic sensitivity to a panel of

common antibiotics. The periapical tissue specimens of 22 out of 28 lesions (79%) contained microorganisms. Of the 22 cases showing positive growth cultures, 15 were polymicrobial and 7 were single species isolates. Fifty-three different species were recovered: 29 anaerobes, 19 facultative anaerobes, and 5 aerobes. Microbes were observed under light microscopy in only one case. The most common organisms isolated were Propionibacterium acnes, Staphylococcus epidermidis, Streptococcus intermedius, Wolinella recta, Fusobacterium species, and Clostridium species. Antibiotic susceptibility results showed no clear cut evidence of significant antibiotic resistance among the species tested. The results of this study seem to corroborate earlier studies regarding the microbial population of periapical lesions refractory to nonsurgical endodontics.

Vila J. et al. *Antimicrobial resistance of diarrheagenic Escherichia coli isolated from children under the age of 5 years from Ifakara, Tanzania.* Antimicrob Agents Chemother. 1999; 43(12) : 3022-4.p Abstract: Diarrhea caused by multidrug-resistant bacteria is an important public health problem among children in developing countries. The prevalence and antimicrobial susceptibility of diarrheagenic Escherichia coli in 346 children under 5 years of age in Ifakara, Tanzania, were studied. Thirty-eight percent of the cases of diarrhea were due to multiresistant enterotoxigenic E. coli, enteroaggregative E. coli, or enteropathogenic E. coli. Strains of all three E. coli categories showed high-level resistance to ampicillin, tetracycline, co-trimoxazole, and chloramphenicol but were highly susceptible to quinolones. Guidelines for appropriate use of antibiotics in developing countries need updating.

Vila L.M. et al. *Expansion of mycobacterium-reactive gamma delta T cells by a subset of memory helper T cells.* Infect Immun. 1995; 63(4) : 1211-7.p Abstract: Human gamma delta T cells expressing the V gamma 9/V delta 2 T-cell receptor have been previously found to proliferate in response to certain microorganisms and to expand throughout life, presumably because of extrathymic activation by foreign antigens. In vitro expansion of V gamma 9/V delta 2 cells by mycobacteria has been previously shown to be dependent on accessory cells. In order to gain an insight into the mechanisms involved in the expansion of these cells, we have undertaken to identify the peripheral blood subset of cells on which proliferation of V gamma 9/V delta 2 cells in response to mycobacteria is dependent. Contrary to their role in antigen presentation to alpha beta T cells, professional antigen-presenting cells, such as monocytes, B cells, and dendritic cells, were unable to provide the cellular support for the expansion of V gamma 9/V delta 2 cells. Selective depletion of T-cell subsets, as well as the use of highly purified T-cell populations, indicated that the only subset of peripheral blood cells that could expand V gamma 9/V delta 2 cells were CD4+ CD45RO+ CD7- alpha beta T cells. These cells underwent distinct intracellular signaling events after stimulation with the mycobacterial antigen. Expansion of V gamma 9/V delta 2 cells by alpha beta T cells was dependent on cell-cell contact. This is the first evidence that a small subset of the memory helper T-cell population is exclusively responsible for the peripheral expansion of V gamma 9/V delta 2 cells. These data illustrate a unique aspect of antigen recognition by gamma delta T cells and provide new means to study their immune defense role.

Vila R. et al. *Composition and antimicrobial activity of the essential oil of Peumus boldus leaves.* Planta Med. 1999; 65(2) : 178-9.p Abstract: The composition and the antimicrobial activity of the essential oil from the leaves of Peumus boldus is investigated. Analyses of the oil obtained by hydrodistillation were carried out by GC and GC-MS using columns of two different stationary phases. Fractionation of the essential oil by column chromatography on silica gel was performed to improve identification of some constituents. More than 90% of the total oil (46 components) was identified, major constituents being monoterpenes (90.5%), among which limonene (17.0%), p-cymene (13.6%), 1.8-cineole (11.8%), and beta-phellandrene (8.4%) reached the highest percentages. Determination of the minimal bactericidal or fungicidal concentration against several microorganisms showed interesting activities towards Streptococcus pyogenes, Micrococcus sp., and Candida sp.

Vilar-Compte D. et al. *Surgical site infections at the National Cancer Institute in Mexico: a case-control study.* Am J Infect Control. 2000; 28(1) : 14-20.p Abstract: OBJECTIVES: To quantify the surgical infection rate and to identify risk factors associated with surgical site infection. METHODS: We conducted a case-control study of all surgical patients between January 1, 1993, and June 30, 1994. The frequency of surgical site infection per 100 surgeries was calculated. The odds ratio (OR) was estimated by using logistic regression analysis. SETTING: A 130-bed tertiary-care teaching hospital for adult patients with cancer. RESULTS: The study followed 3372 surgeries. Three hundred thirteen patients had a surgical site infection (rate per 100 surgeries: 9. 30). The risk factors associated with surgical site infection were diabetes mellitus (OR = 2.5, 95% confidence interval [CI] = 1.27-4. 91), obesity (OR = 1.76, 95% CI = 1.14-2.7), presence of surgical drains for >5 and <16 days (OR = 1.84, 95% CI = 1.02-3.31), and presence of surgical drains for >/=16 days (OR = 2.14, 95% CI = 1. 0-4.6). The bacteria most frequently isolated were Escherichia coli 38 (21.8% of the total of microorganisms found), Pseudomonas sp 22 (12.6%), Staphylococcus aureus 16 (9.2%), and coagulase-negative Staphylococcus 25 (13.6%). The coexistence of other nosocomial infections was greater among the cases (OR = 1.8, 95% CI = 1.1-3.1) than in the control group. CONCLUSIONS: The surgical site infection rate in our hospital is slightly higher than the rates reported for general hospitals. The risk factors associated with surgical site infection are similar to those previously reported. Diabetes mellitus, obesity, and prolonged presence of a surgical drain increased the risk of infection.

Vilchez S. et al. *Proline catabolism by Pseudomonas putida: cloning, characterization, and expression of the put genes in the presence of root exudates.* J Bacteriol. 2000; 182(1) : 91-9.p Abstract: Pseudomonas putida KT2442 is a root-colonizing strain which can use proline, one of the major components in root exudates, as its sole carbon and nitrogen source. A P. putida mutant unable to grow with proline as the sole carbon and nitrogen source was isolated after random mini-Tn5-Km mutagenesis. The mini-Tn5 insertion was located at the putA gene, which is adjacent to and divergent from the putP gene. The putA gene codes for a protein of 1,315 amino acid residues which is homologous to the PutA protein of Escherichia coli, Salmonella enterica serovar Typhimurium, Rhodobacter capsulatus, and several Rhizobium strains. The central part of P. putida PutA showed homology to the proline dehydrogenase of Saccharomyces cerevisiae and Drosophila melanogaster, whereas the C-terminal end was homologous to the pyrroline-5-carboxylate dehydrogenase of S. cerevisiae and a number of aldehyde dehydrogenases. This suggests that in P. putida, both enzymatic steps for proline conversion to glutamic acid are catalyzed by a single polypeptide. The putP gene was homologous to the putP genes of several prokaryotic microorganisms, and its gene product is an integral inner-membrane protein involved in the uptake of proline. The expression of both genes was induced by proline added in the culture medium and was regulated by PutA. In a P. putida putA-deficient background, expression of both putA and putP genes was maximal and proline independent. Corn root exudates collected during 7 days also strongly induced the P. putida put genes, as determined by using fusions of the put promoters to 'lacZ. The induction ratio for the putA promoter (about 20-fold) was 6-fold higher than the induction ratio for the putP promoter.

Villari P. et al. *Molecular epidemiology of Staphylococcus epidermidis in a neonatal intensive care unit over a three-year period.* J Clin Microbiol. 2000; 38(5) : 1740-6.p Abstract: Coagulase-negative staphylococci, especially Staphylococcus epidermidis, are increasingly important nosocomial pathogens, particularly in critically ill neonates. A 3-year prospective surveillance of nosocomial infections in a neonatal intensive care unit (NICU) was performed by traditional epidemio-

logic methods as well as molecular typing of microorganisms. The aims of the study were (i) to quantify the impact of S. epidermidis on NICU-acquired infections, (ii) to establish if these infections are caused by endemic clones or by incidentally occurring bacterial strains of this ubiquitous species, (iii) to evaluate the use of different methods for the epidemiologic typing of the isolates, and (iv) to characterize the occurrence and the spread of staphylococci with decreased glycopeptide susceptibility. Results confirmed that S. epidermidis is one of the leading causes of NICU-acquired infections and that the reduced glycopeptide susceptibility, if investigated by appropriate detection methods such as population analysis, is more common than is currently realized. Typing of isolates, which can be performed effectively through molecular techniques such as pulsed-field gel electrophoresis but not through antibiograms, showed that many of these infections are due to clonal dissemination and, thus, are potentially preventable by strict adherence to recommended infection control practices and the implementation of programs aimed toward the reduction of the unnecessary use of antibiotics. These strategies are also likely to have a significant impact on the frequency of the reduced susceptibility of staphylococci to glycopeptides, since this phenomenon appears to be determined either by more resistant clones transmitted from patient to patient or, to a lesser extent, by strains that become more resistant as a result of antibiotic pressure.

Villaseñor Sierra A. et al. *Susceptibilidad de cepas de Haemophilus influenzae no tipificable a laracarbef (LY163892) y antimicrobianos de uso común.* Enferm. Infecc. Microbiol. 1995; 15(3) : 126-8.p Abstract: La participación de cepas de Haemophilus influenzae no tipificable en infecciones de vías respiratorias superiores es frecuente. En las últimas dos décadas un aumento gradual de resistencia mediada por beta lactamasa de H. infuenzae no tipificable se ha observado. Nosotros evaluamos el patrón de susceptbilidad mediante la técnica de kirby.Bauer, de 150 cepas de H. influenzae no tipificable de niños portadores sanos a cuatro antibióticos de uso común y determinamos la producción de á-lactamasa por la técnica de cefinasa. Encontramos que 129/150 (86 por ciento) fueron susceptibles y 17 (11 por ciento) resistentes a ampicilina; de estas 17, sólo 7 fueron productoras de á-lactamasas. La susceptibilidad para cefaclor fue 140/150 (95 por ciento); para trimetroprim/sulfametoxazol 97 por ciento, y para loracarbef el 93 por ciento. En este estudio encontramos que la resistencia de H. influenzae no tipificable a ampicilina fue inferior a lo reportado en Estados Unidos y que de las cepas resistentes menos de la mitad fueron productoras de beta lactamasas. La actividad in vitro de loracarbef contra cepas de H. Influenzae no tipificable mostró ser similar a cefaclor pero inferior trimetropim/sulfametozaxol, aunque con la ventaja de tner adecuada cobertura contra estreptococos(AU).

Villate J.I. et al. *[Peracetic acid: alternative to the sterilization of bronchofibroscopes].* Arch Bronconeumol. 1997; 33(3) : 133-5.p Abstract: The Steris system for cold sterilization with peracetic acid was evaluated by effecting a series of contaminations of a fiberoptic bronchoscope (FB) with specimens of Pseudomonas aeruginosa, Acinetobacter baumanii and Mycobacterium kansasi. The FB was contaminated 24 times, 8 times by each microorganism, using specimens containing more than 10(8) cfu/ml. After fixing the secretions on the FB and washing it with enzyme soap, the BF was sterilized. Specimens were taken for culturing after contamination of the FB, after washing, immediately after sterilization and 1 hour after sterilization. No microorganism growth of any of the samples was detected either immediately after sterilization or one hour later. Microbiological data confirmed contamination of the FB after aspiration and fixation of the inoculate. Chemical and biological tests with B. stearothermophilus spores as specified by the manufacturer were correct in all cases: 24 contaminations and 52 processes of prior training. The efficacy of washing with enzyme soap before sterilization stands out. In 14 of the 24 samples, culture was negative after washing and in 7 the concentration of microorganisms was less than 500 cfu/ml, which confirms the need for appropriate washing before any disinfection or sterilization process is begun. In conclusion, the Steris system based on peracetic acid is an alternative to other systems for cold sterilization or high level disinfection.

Villers D. et al. *Nosocomial Acinetobacter baumannii infections: microbiological and clinical epidemiology.* Ann Intern Med. 1998; 129(3) : 182-9.p Abstract: BACKGROUND: Acinetobacter baumannii is an important opportunistic pathogen that is rapidly evolving toward multidrug resistance and is involved in various nosocomial infections that are often severe. It is difficult to prevent A. baumannii infection because A. baumannii is ubiquitous and the epidemiology of the infections it causes is complex. OBJECTIVE: To study the epidemiology of A. baumannii infections and assess the relation between fluoroquinolone use and the persistence of multidrug-resistant clones. DESIGN: Three case-control studies and a retrospective cohort study. SETTING: A 20-bed medical and surgical intensive care unit. PATIENTS: Acinetobacter baumannii was isolated from 45 patients in urine (31%), the lower respiratory tract (26.7%), wounds (17.8%), blood (11.1%), skin (6.7%), cerebrospinal fluid (4.4%), and sinus specimens (2.2%). One death was due to A. baumannii infection. MEASUREMENTS: Antimicrobial resistance pattern and molecular typing were used to characterize isolates. The incidence of A. baumannii infection and the use of fluoroquinolones were calculated annually. RESULTS: Initially, 28 patients developed A. baumannii infection. Eleven isolates had the same antimicrobial susceptibility profile, genotypic profile, or both (epidemic cases), and 17 were heterogeneous (endemic cases). A surgical procedure done in an emergency operating room was the main risk factor for epidemic cases, whereas previous receipt of a fluoroquinolone was the only risk factor for endemic cases. The opening of a new operating room combined with the restriction of fluoroquinolone use contributed to a transitory reduction in the incidence of infection. When a third epidemiologic study was done, previous receipt of a fluoroquinolone was again an independent risk factor and a parallel was seen between the amount of intravenous fluoroquinolones prescribed and the incidence of endemic infection. CONCLUSION: Epidemic infections coexisted with endemic infections favored by the selection pressure of intravenous fluoroquinolones.

Vinagre C. et al. *[Emergence of resistance to macrolides in Streptococcus pyogenes].* Rev Med Chil. 1999; 127(12) : 1447-52.p Abstract: BACKGROUND: Diseases produced by Streptoccocus pyogenes are still a problem in Chile, as in the rest of the world. It exhibits in vitro susceptibility to different antimicrobials, but penicillin continues to be the treatment of choice. Alternative drugs have been developed for allergic patients, such as erythromycin, new macrolides and cephalosporins. Nevertheless, resistant strains are appearing due to the indiscriminate use of macrolides. AIM: To assess present antimicrobial susceptibility of S Pyogenes strains isolated from chilean patients. MATERIAL AND METHODS: The susceptibility to penicillin, macrolides, clindamycin, cephalotin and vancomycin of 153 S Pyogenes strains, obtained from different health centers of the Metropolitan Region and isolated between 1996 and 1998, was assessed using the Kirby-Bauer method. Agar dilution minimal inhibitory concentration was then determined to macrolide resistant strains. RESULTS: All strains were susceptible to penicillin. There was a 7.2% cross-resistance to macrolides. CONCLUSIONS: These results confirm that S Pyogenes resistance to macrolides has increased considerably in the Metropolitan Region of Chile during the last years.

Vindenes H. et al. *Microbial colonization of large wounds.* Burns. 1995; 21(8) : 575-9.p Abstract: This study determines the nature of microbial wound colonization in 28 patients with large burns admitted to the Burn Centre, Haukeland University Hospital, Bergen. Altogether, 748 swabs were taken in 141 sampling procedures. A total of 414 microbial isolates were detected and their resistance patterns to a variety of systemic antimicrobial agents determined. The

most frequent isolates were coagulase-negative staphylococci (21.5 per cent) and Staphylococcus aureus (14 per cent), followed by Enterococcus species (11.3 per cent), Pseudomonas aeruginosa (10.9 per cent) and Candida species (9.7 per cent). Forty-one per cent of the enterococci and 36 per cent of the coagulase-negative staphylococci were resistant to the aminoglycosides routinely given in conjunction with surgery in our ward. Only four of the 89 strains of coagulase-negative staphylococci were insensitive to methicillin, and no Staph. aureus were methicillin resistant. The time-related changes of burn wound colonization showed that on admission and during the first week, staphylococci and alpha-haemolytic streptococci were dominant. During the next weeks, these bacteria were gradually superceded by enterococci, gram-negative opportunists (mainly Pseud. aeruginosa, Acinetobacter calcoaceticus and Escherichia coli) and Candida species. The nature of microbial wound colonization and how the flora changes with time should be taken into consideration by those treating thermally injured patients.

Viola R. et al. *An unusual epidemic of Staphylococcus-negative infections involving anterior cruciate ligament reconstruction with salvage of the graft and function*. Arthroscopy. 2000; 16(2) : 173-7.p Abstract: We performed a retrospective study of 13 patients who had postoperative clinical and laboratory signs of infection after autogenous bone-patellar tendon-bone (BPTB) anterior cruciate ligament (ACL) reconstructions. From January 1991 to November 1996 we experienced only 2 infected knees in 1,300 reconstructions, but between December 1996 and February 1997 10 patients in 70 ACL reconstructions developed a postoperative suspected infection. We found the origin of contamination (coagulase-negative Staphylococcus) in the supposedly sterile inflow cannula. When we changed this device, we had only 1 infection in the next 400 reconstructions. The diagnosis in these cases was derived from clinical signs and laboratory results, but only 2 of 11 samples of aspirated synovial fluid tested positive for Staphylococcus. The mean interval between the surgery and the onset of signs of infection and the start of antibiotic therapy was 7.7 days. All the patients had antibiotic association at the highest level. Six knees underwent arthroscopic debridement when the clinical signs indicated resistence to antibiotics. The normal postoperative rehabilitation program was modified but was not discontinued. Although recovery time was longer, overall results were similar to uncomplicated reconstructions. On the basis of our experience, we believe that when there is a notable increase in infection rates, a thorough search for contamination is indicated. Our source of infection was material that was thought to be sterile. Ultimately, early diagnosis and treatment is of critical importance to obtain good results. Even suspicion of infective postoperative complication should be sufficient cause to search for responsible microorganisms and begin antibiotic therapy. Arthroscopic debridement should be proposed to patients with resistence to antibiotics.

Virk A. et al. *Clinical aspects of antimicrobial resistance.* Mayo Clin Proc. 2000; 75(2) : 200-14.p Abstract: Soon after penicillin was introduced into clinical use, an enzyme (penicillinase) that inactivated it was discovered. Since then, the variety of antimicrobial agents has increased substantially, along with a parallel increase in resistant pathogenic microorganisms. Resistance is now recognized against all available antimicrobial agents. Factors influencing the emergence of resistance include indiscriminate use of antibiotics, prolonged hospitalizations, increasing numbers of immunocompromised patients, and medical progress resulting in increased use of invasive procedures and devices. This article provides an update on clinical aspects of a few commonly found resistant microorganisms relevant to day-to-day clinical practice. A discussion of all resistant organisms is beyond the scope of this report. Both viral and mycobacterial resistance have been addressed in previous articles in this symposium.

Vogel L. et al. *Biofilm production by Staphylococcus epidermidis isolates associated with catheter related bacteremia*. Diagn Microbiol Infect Dis. 2000; 36(2) : 139-41.p Abstract: The mean biofilm production of 22 Staphylococcus epidermidis isolates associated with catheter related bacteremia was significantly higher than that of 32 nose isolates from healthy individuals. This difference was due to seven catheter related isolates. These findings do not show a clear association between biofilm production and virulence.

Vogiatzakis E. et al. *Molecular markers for the investigation of Mycobacterium gordonae epidemics.* J Hosp Infect. 1998; 38(3) : 217-22.p Abstract: Mycobacterium gordonae was isolated as a light growth from bronchoalveolar aspirates from nine patients over 12 months. All patients were in one hospital, and had been bronchoscoped for suspected malignancy. None of the patients had symptoms or radiographic findings of mycobacterial infection. The isolates were characterized by biochemical tests and molecular hybridization. Random amplified polymorphic DNA analysis (RAPD) was used to test whether the strains had a common origin. All the isolates generated four to eight fragments, and almost all presented distinct RAPD patterns. Antimicrobial resistance patterns to six agents confirmed that the isolates were unrelated. Thus epidemiologically unrelated strains of M. gordonae can exist as contaminants in the same department over a relatively short time frame. RAPD analysis is easy to perform, gives rapid results, and can be used for epidemiological analysis of M. gordonae isolates.

Volk E.E. et al. *The diagnostic usefulness of bone marrow cultures in patients with fever of unknown origin*. Am J Clin Pathol. 1998; 110(2) : 150-3.p Abstract: Bone marrow cultures (BMCs) and blood cultures (BCs) are frequently obtained in the evaluation of fever of unknown origin (FUO). However, the low yield of clinically significant isolates leads to questions about their cost-effectiveness. We retrospectively compared BMC with BC and studied the usefulness of bone marrow trephine biopsy (BMTB) histopathology in detecting infection in an unselected population of 61 patients with FUO, among whom 215 BMCs had been performed. For patients who had undergone BMTB, the histopathology was evaluated for granulomas and microorganisms. Only 1 BMC had a clinically significant isolate, Mycobacterium avium complex (MAC), which was also identified by BC. Rhodotorula rubra was found in the BMC of another patient and classified as a contaminant. Both patients had HIV infection. No growth occurred in BCs for the other 59 patients. Culture results for all 26 BMTB specimens were negative; 4 contained nonnecrotizing granulomas, including the case with MAC. BMCs are probably not justified for routine initial evaluation of FUO, but may be valuable after culture results for blood and easily obtainable tissues have been negative. Bone marrow histopathology and special stains for microorganisms in the absence of granulomas were noncontributory.

Volynchik E.P. et al. *[Pyogenic infectious complications in recipients with allogenic kidneys: clinical and bacteriological aspects]*. Vestn Ross Akad Med Nauk. 1998; (6) : 56-8.p Abstract: The bacteriological study of wound discharge indicated no changes in the structure of the microflora in the allogenic kidneys of recipients throughout the follow-up. Among microbes isolated there were prevalent gram-positive microbes whose proportion has slightly increased in the past year, with Staphylococcus, mainly epidermal Staphylococcus, which contributes to the etiology. At the same time, studies of wound discharge in the past years showed that the incidence of mixed infections had increased from 4.3 in 1989-1991 to 15.6% in 1994-1997. Bacteriological urinalysis found no great differences in the etiological structures of the microflora. Gram-negative microbes are prevalent in all patients in three periods of follow-up. Noteworthy, there was an increase in the amount of yeast fungi (from 5.7 to 21.1%). Urinalysis showed that the rates in the isolation of bacterial and bacterial and fungal associations were steady-state and higher in all patients (20, 4-23, 5%). Examining the etiological structure of the pathogens of sepsis ascertained that patients of the early observation were found to isolate gram-negative microorganisms more frequently, while those of other observation periods have gram-positive ones. The overall proportion of microbial and microbe-fungal asso-

ciations was 10.3% in the past 9 years. Since the patient's body is occupied by other pathogens due to immunosuppression, sepsis or wound infection was accompanied by high bacteriuria, cytomegalovirus infection, pneumocystic pneumonia, fungal infection, etc. For this reason, the patients had actually much higher quantities of mixed infections in sepsis, wound infection, or urinary infection than those taken into account while studying the only type of an infectious complication. The above leads to the conclusion that the incidence of mixed infection of recipients of allogenic kidneys is rather high. This infection substantially makes the choice of drugs and therapy difficult, the course of a wound process aggravated. For successful control of mixed infections, it is necessary to introduce new drugs having a high activity against bacteria, fungi, viruses, and protozoa and to use the latest differentially diagnostic culture media, to make diagnosis and treatment of pyoseptic diseases better.

von Reyn C.F. et al. *Polyclonal Mycobacterium avium infections in patients with AIDS: variations in antimicrobial susceptibilities of different strains of M. avium isolated from the same patient*. J Clin Microbiol. 1995; 33(4) : 1008-10.p Abstract: Broth microdilution MICs were determined for pairs of strains isolated from five AIDS patients with polyclonal Mycobacterium avium infection. Four (80%) of the five patients were infected simultaneously with strains having different antimicrobial susceptibility patterns. These findings have implications for the interpretation of susceptibility data in M. avium prophylaxis and treatment trials.

Vorob'ev A.A. et al. *[Experimental evaluation of the antibacterial activity of tomato pulp oil extract]*. Zh Mikrobiol Epidemiol Immunobiol. 1998; (6) : 8-11.p Abstract : The antibacterial action of the oil extract obtained from tomato pulp has been studied with the use of museum strains Escherichia coli ATCC 25922, Staphylococcus aureus ATCC 5638-P and Candida albicans ATCC 885-653, recommended for the determination of the antibacterial activity of medicinal preparations (State Pharmacopoeia, edition XI), as well as Enterobacter, Streptococcus, Staphylococcus, Klebsiella and Escherichia clinical strains. As revealed in this study, tomato pulp oil extract produces a wide-spectrum antibacterial effect on Gram-positive and Gram-negative microorganisms and on fungi of the genus Candida. The study has determined that this antibacterial action is linked with the presence of a complex of organic acids (succinic, citric, tartaric, etc.).

Vromen M. et al. *Antimicrobial resistance patterns in urinary isolates from nursing home residents. Fifteen years of data reviewed*. J Antimicrob Chemother. 1999; 44(1) : 113-6.p Abstract: The antibiotic resistance patterns of gram-negative bacteria isolated from nursing home patients between 1983 and 1997 were analysed. Escherichia coli was the most prevalent isolate (48%) followed by Proteus spp. (26%) and other Enterobacteriaceae (20%). During the study period, the susceptibility of E. coli decreased for co-trimoxazole (79% to 62%), increased for nitrofurantoin (79% to 91%) and remained unchanged for amoxycillin (41%). Susceptibility to norfloxacin, available from 1990, decreased from 87% to 71%. Similar trends were observed when the susceptibilities of all gram-negative urinary pathogens were combined. The changes in susceptibility can probably be attributed to the empirical prescribing practices in the nursing homes studied.

Vyhnanek F. et al. *[Immunotherapy as part of comprehensive therapy in abdominal reoperations with septic complications]*. Acta Medica (Hradec Kralove) Suppl. 1997; 40(2) : 97-100.p Abstract: On the base of literature and clinical experience indications of human immunoglobulins in the treatment of infections in surgical patients are presented. Besides prophylactic using in elective operations immunoglobulins were administered as a part of treatment in septic complications, postinjured infections, hospital acquired infections in ICU and immunosuppression. Application of immunoglobulins are regularly part of adjuvant therapy of sepsis in surgical patients. Intravenous immunoglobulins—Pentaglobin and Endobulin were administered postoperatively in patients with reoperations for postoperative peritonitis. For evaluation of effects of immunoglobulins there are presented some clinical and laboratory parameters of sepsis.

Vyhnanek F. et al. *[Fluoroquinolones in antimicrobial therapy and prophylaxis in surgery]*. Rozhl Chir. 1995; 74(6) : 257-61.p Abstract: The authors evaluate, based on laboratory and clinical experiments, the importance of quinolones in the antimicrobial prophylaxis and therapy in surgery. In the laboratory investigations they assessed the present state of resistance of some Gram-negative and Gram-positive bacteria to fluoroquinolones-pefloxacine, ofloxacine and ciprofloxacine. In the clinical part the authors made a comparative study of pefloxacine and a cephalosporin of the third generation, ceftazidime, in the treatment of nosocomial postoperative and posttraumatic inflammatory affestions of the lower airways in 20 patients in both groups. The patients were hospitalized at the intensive care unit in 1993-1994. The action of the two chemotherapeutic agents was comparable, in 18 patients of both groups the infections disappeared and regression of the inflammatory pulmonary affection was recorded.

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Wachowski I. et al. *The growth of microorganisms in propofol and mixtures of propofol and lidocaine*. Anesth Analg. 1999; 88(1) : 209-12.p Abstract: Propofol emulsion supports bacterial growth. Extrinsic contamination of propofol has been implicated as an etiological event in postsurgical infections. When added to propofol, local anesthetics (e.g., lidocaine) alleviate the pain associated with injecting it. Because local anesthetics have antimicrobial activity, we determined whether lidocaine would inhibit microbial growth by comparing the growth of four microorganisms in propofol and in mixtures of propofol and lidocaine. Known quanta of Staphylococcus aureus, Escherichia coli, Pseudomonas aeruginosa, and Candida albicans were inoculated into solutions of 1% propofol, 0.2% lidocaine in propofol, 0.5% lidocaine in propofol, 0.5% lidocaine in isotonic sodium chloride solution, and 0.9% isotonic sodium chloride solution. All microorganisms were taken from stock cultures and incubated for 24 h. Growth of microorganisms in each solution was compared by counting the number of colony-forming units grown from a subculture of the solution at 0, 3, 6, 12 and 24 h. Propofol supported the growth of E. coli and C. albicans. Propofol maintained static levels of S. aureus and was bactericidal toward P. aeruginosa. The addition of 0.2% and 0.5% lidocaine to propofol failed to prevent the growth of the studied microorganisms. The effect of 0.5% lidocaine in isotonic sodium chloride solution did not differ from the effects of isotonic sodium chloride solution alone. We conclude that lidocaine, when added to propofol in clinically acceptable concentrations, does not exhibit antimicrobial properties. IMPLICATIONS: Local anesthetics such as lidocaine have antimicrobial activity. Propofol supports the growth of bacteria responsible for infection. Bacteria were added to propofol and propofol mixed with lidocaine. The addition of lidocaine to propofol in clinically relevant concentrations did not prevent the growth of bacteria. The addition of lidocaine to propofol cannot prevent infection from contaminated propofol.

Wachter D.A. et al. *Antibiotic dispensing by drug retailers in Kathmandu, Nepal*. Trop Med Int Health. 1999; 4(11) : 782-8.p Abstract: OBJECTIVES To assess over-the-counter antimicrobial dispensing by drug retailers in Kathmandu, Nepal, for rationality, safety, and compliance with existing government regulations. METHODS: Standardized cases of dysuria in a young adult male and acute watery diarrhoea in a child were presented by a mock patient to retailers at 100 randomly selected pharmacies. Questions asked by retailers and advice and medications given at their initiative were recorded.

RESULTS: All retailers engaged in diagnostic and therapeutic behaviour beyond their scope of training or legal mandate. Historical information obtained by retailers was inadequate to determine the nature or severity of disease or appropriateness of antimicrobial therapy. 97% (95% CI = 91.5-99.4%) of retailers dispensed unnecessary antimicrobials in diarrhoea, while only 44% (95% CI = 34.1-54.3%) recommended oral rehydration therapy and only 3% (95% CI = 0.6-8.5%) suggested evaluation by a physician. 38% (95% CI = 28.5-48.2%) gave antimicrobials in dysuria, yet only 4% (95% CI = 1.1-9.9%) adequately covered cystitis. None covered upper urinary tract or sexually transmitted infections, conditions which could not be ruled out based on the interviews, and only 7% (95% CI = 2.9-13.9%) referred for a medical history and physical examination necessary to guide therapy. CONCLUSIONS: Although legislation in Nepal mandates a medical prescription for purchase of antibiotics, unauthorized dispensing is clearly problematic. Drug retailers in our study did not demonstrate adequate understanding of the disease processes in question to justify their use of these drugs. Risks of such indiscretion include harm to individual patients as well as spread of antimicrobial resistance. More intensive efforts to educate drug retailers on their role in dispensing, along with increased enforcement of existing regulations, must be pursued.

Wade J.J. *Enterococcus faecium in hospitals.* Eur J Clin Microbiol Infect Dis. 1997; 16(2) : 113-9.p Abstract: Most of the characteristics that have ensured the success of enterococci as nosocomial pathogens were described early in this century. Enterococcus faecium and Enterococcus faecalis, the enterococci most frequently isolated from clinical material, differ fundamentally. The intrinsic antimicrobial resistance of Enterococcus faecium, supplemented by acquired resistance mechanisms, can generate a glycopeptide-multiply-resistant nosocomial pathogen that survives on hands and in the environment, and has the potential for intra-hospital and inter-hospital spread. The use of terms such as 'an enterococcus', 'faecal streptococci' and 'group D streptococci' have hindered, and still hinder, our understanding of a species rapidly emerging as the most problematic of nosocomial pathogens.

Wagner M.B. et al. *Hospital-acquired infections among surgical patients in a Brazilian hospital.* J Hosp Infect. 1997; 35(4) : 277-85.p Abstract: A historical cohort study was conducted among surgical patients in a large general hospital in Porto Alegre, Brazil between March 1992 and May 1993. Data were collected by means of a retrospective chart review, which followed a standardized method based on the systematic review of all clinical and laboratory information available in the hospital records. The criteria for diagnosis of all hospital-acquired infections (HAIs) were based on those from the Centers for Disease Control, Atlanta. In total, 890 HAIs were detected among the 4199 patients included in the cohort. The incidence rate of HAIs for all sites combined was 21.20%. Incidence rates ranged from 2.95% for bloodstream infections to 8.65% for surgical wound infections. The overall incidence density was 16.32 HAIs per 1000 patient-days. Incidence densities ranged from 2.03 for bloodstream infections to 7.46 per 1000 patient-days for surgical wound infections. The median incubation period for surgical wound infections was seven days, and 29.4% of these infections were detected at post-discharge. Gram-negative bacteria were the most common organisms implicated in HAIs.

Wainwright M. *Highly pleomorphic staphylococci as a cause of cancer.* Med Hypotheses. 2000; 54(1) : 91-4.p Abstract: An extensive historical literature exists suggesting that bacteria and other non-virus microorganisms cause cancer. Much of this literature stresses the likely involvement of highly pleomorphic bacteria in carcinogenesis. Pleomorphic bacteria exhibit a variety of morphological types, some of which are identical to other bacteria. In particular, bacteria that can express more than one morphology, including that normally associated with common species of Staphylococcus, have frequently been isolated from cancers. Not surprisingly, this has led to considerable confusion and ridicule. The literature linking highly pleomorphic bacteria with carcinogenesis is presented here in an attempt to add weight to the view that bacteria, notably those expressing the morphology of common species of staphylococci, cause cancer.

Waites K. et al. *In vitro activities of oral antimicrobial agents against penicillin-resistant Streptococcus pneumoniae: implications for outpatient treatment.* South Med J. 1997; 90(6) : 621-6.p Abstract: We tested 83 penicillin-intermediate (Peni) and 50 penicillin-resistant (Penr) isolates of Streptococcus pneumoniae against eight oral antimicrobials. Clarithromycin's MICs (minimal inhibitory concentration) were generally the same or one to two dilutions less than those of azithromycin. Seventy-two percent of Peni isolates were susceptible to clarithromycin and azithromycin, in contrast to 42% and 40%, respectively, of Penr isolates. Cefuroxime activity exceeded that of cefprozil, which exceeded that of cefaclor, in Peni isolates. For all three cephalosporins, MICs of 90% of isolates tested were > or = 3 dilutions higher for Penr isolates than for Peni isolates. Percentages of Peni isolates susceptible to clindamycin and tetracycline were 92% and 83%, respectively, and 78% and 82% for Penr. Only 49% of Peni isolates and 4% of Penr isolates were susceptible to trimethoprim-sulfamethoxazole. Azithromycin, clarithromycin, cefuroxime, cefprozil, clindamycin, and tetracycline may be useful in treating infections caused by Peni S pneumoniae, but Penr isolates are frequently resistant to both old and newer agents.

Waites K.B. et al. *Antimicrobial resistance in gram-negative bacteria isolated from the urinary tract in community-residing persons with spinal cord injury.* Arch Phys Med Rehabil. 2000; 81(6) : 764-9.p Abstract: OBJECTIVE: To assess the epidemiology of antimicrobial resistance among community-residing persons with spinal cord injury (SCI). DESIGN: Retrospective analysis of existing data. SETTING: Data were obtained from persons with SCI attending clinic for annual examinations. PARTICIPANTS: Two hundred eighty-seven SCI outpatients. INTERVENTION: None. MAIN OUTCOME MEASURE: Occurrence of bacteriuria with gram-negative organisms demonstrating resistance to antimicrobial agents in 2 or more classes. RESULTS: There were 706 gram-negative isolates from 444 urine specimens. Resistance to drugs in 2 or more classes occurred in 33% of bacterial isolates, but did not significantly increase in frequency among those injured for longer periods or more severely. Significantly higher rates of multidrug-resistant bacteria occurred in specimens from males, younger age group (< or =45 yrs), and persons with indwelling and condom catheters. CONCLUSIONS: Antimicrobial resistance in outpatients with SCI is common and is related to widespread use of specific drugs, type of bladder management, and other host factors.

Walker E.S. et al. *Long-term trends in susceptibility of Moraxella catarrhalis: a population analysis.* J Antimicrob Chemother. 2000; 45(2) : 175-82.p Abstract: A retrospective, population analysis of antimicrobial susceptibility patterns was performed on Moraxella catarrhalis isolates recovered from a single medical centre to detect temporal trends and infer potential mechanisms of reduced susceptibility. The duration of this study, June 1984 to July 1994, encompassed the period during which the frequency of beta-lactamase production expanded from 30 to 96% in the population. MICs of penicillin G, cefamandole, ceftriaxone, amoxycillin/clavulanate, imipenem, clarithromycin, tetracycline, ciprofloxacin and trimethoprim/sulphamethoxazole for a representative sample of 375 isolates were determined. Analyses were conducted to test for variation in susceptibility among isolates, correlations of susceptibility levels among different antimicrobial agents, and temporal patterns in susceptibility. All antimicrobials except clarithromycin displayed significant differences among isolates within years, and mean MICs of all antimicrobial agents except tetracycline and clarithromycin varied significantly between years. Temporal trends to a reduction in susceptibility were detected to four of five beta-lactam antimicrobials (all except cefamandole). Significant correlations in MICs were uncovered among all pairs of four beta-lac-

tam antimicrobials in both producers and non-producers of beta-lactamase. In contrast, cefamandole MICs were correlated only with ceftriaxone and penicillin, and these were limited to beta-lactam producing isolates; cefamandole and amoxycillin/clavulanate showed a correlation limited to non-producing isolates. For some antimicrobials, trends toward decreasing susceptibility may have been caused by an increased proportion of beta-lactamase producing isolates in the population, but the observation of significant decreases in susceptibility limited to beta-lactamase-producing isolates suggests that the underlying factors were different forms of beta-lactamase, beta-lactamase-dependent modifiers and/or additional factors.

Wallrauch C. et al. *[Antibiotic resistance of enterococci in Germany].* Med Klin. 1997; 92(8) : 464-8, 505.p Abstract: BACKGROUND: The resistance of enterococci against various antimicrobial substances including vancomycin has increased markedly. Since 1989 in the USA in particular high resistance rates against vancomycin have been observed but very few surveillance have been published in Europe. Therefore, we conducted a multicenter study in Germany to obtain information about the incidence and distribution of vancomycin and/or high-level aminoglycoside-resistant enterococci. METHODS: A total of 2046 enterococcal isolates were identified and susceptibility-testing was performed according to international guidelines. RESULTS: A total number of 90.5% of the enterococcal isolates were identified as Enterococcus faecalis and 7.8% was Enterococcus faecium. Resistance against ampicillin was detected in 56.6% of the Enterococcus faecium isolates, however, in only one Enterococcus faecalis isolate. High-level resistance against gentamycin or streptomycin was observed in 7.3% and 24.8% of the isolates, respectively. Twelve isolates showed resistance against vancomycin, however, cross resistance with teicoplanin was found in only two isolates. CONCLUSION: The rate of resistance of enterococci in Germany is still considerably lower than in the United States. Previous vancomycin therapy has been implemented as a risk factor for colonization or infection with vancomycin-resistant enterococci. Continued vigilance, decreased use of vancomycin and strict enforcement of infection control measures are appropriate measures to control the growing problem of resistant enterococci.

Wallrauch C. et al. *[In vitro activity of sparfloxacin against methicillin-resistant staphylococci].* Arzneimittelforschung. 1995; 45(6) : 723-5.p Abstract: The antimicrobial activity of sparfloxacin (CAS 110871-86-8) against 154 clinical isolates of methicillin-resistant staphylococci was investigated and compared with that of 6 other fluoroquinolones. The isolates consisted of 100 methicillin-resistant Staphylococcus aureus (MRSA), 29 Staphylococcus epidermidis (MRSE) and 25 other coagulase-negative staphylococci (CNS). Sparfloxacin was more active than ciprofloxacin and the other fluoroquinolones against all strains tested. The MIC90 of sparfloxacin against the 100 isolates of Staphylococcus aureus was 8 mg/l, while that of ciprofloxacin was > or = 64 mg/l. Moreover, ciprofloxacin-susceptible MRSA isolates were inhibited by sparfloxacin at a concentration of < or = 0.06 mg/l. The other quinolones had an MIC90 ranging from 0.5 mg/l to 4 mg/l against ciprofloxacin-susceptible MRSA. Similar results were obtained for the MRSE and CNS isolates tested. As many as 90% of the ciprofloxacin-susceptible microorganisms were inhibited at a concentration of < or = 0.06 mg/l or 0.125 mg/l of sparfloxacin. The MIC90 of sparfloxacin against ciprofloxacin-resistant CNS and MRSE were 4 mg/l and 8 mg/l, respectively. Sparfloxacin was clearly more active than any of the other quinolones against all species tested, although higher concentrations were needed to inhibit ciprofloxacin-resistant staphylococci.

Walls I. et al. *Use of predictive microbiology in microbial food safety risk assessment.* Int J Food Microbiol. 1997; 36(2-3) : 97-102.p Abstract: Microbial risk assessment is a newly emerging discipline in the area of food safety. One of the difficulties associated with microbial risk assessment is in determining the number of microorganisms in food at a given time, i.e.. estimating exposure of an individual to the microorganism. Numbers of bacteria in food can change at all stages of food production and processing, depending on the nature of the food and the way it is handled, stored and processed. Predictive microbiology can be used to estimate changes in bacterial numbers, allowing exposure of an individual to a pathogen to be assessed. A survey was sent to scientists in the food industry to determine their perspective on the role of predictive microbiology in conducting microbial risk assessments. In this paper, responses to that survey are presented, as well as examples of the potential risk of foodborne illness from a cooked meat product contaminated with Staphylococcus aureus and hamburger contaminated with Salmonella.

Walsh J.T. et al. *Comparison of central venous and inferior vena caval pressures.* Am J Cardiol. 2000; 85(4) : 518-20, A11.p Abstract: Inferior vena caval pressures were measured in 60 patients undergoing cardiac catheterization and compared with central venous pressure from within the right atrium. Mean pressures within the abdominal inferior vena cava were essentially the same as mean right atrial pressure, suggesting that the inferior vena cava provides a useful safe alternative for measuring central venous pressure.

Walters C.E. et al. *In vitro modulation of keratinocyte-derived interleukin-1 alpha (IL-1 alpha) and peripheral blood mononuclear cell-derived IL-1 beta release in response to cutaneous commensal microorganisms.* Infect Immun. 1995; 63(4) : 1223-8.p Abstract: The ability of a range of skin commensal microorganisms to modulate interleukin-1 (IL-1) release by cultured human keratinocytes and peripheral blood mononuclear cells (PBMCs) was investigated by a combination of enzyme-linked immunosorbent assays and bioassays. Three fractions (formaldehyde-treated whole cells, culture supernatants, and cellular fractions) were prepared from Propionibacterium acnes, Propionibacterium granulosum, Staphylococcus epidermidis, Staphylococcus capitis, Staphylococcus hominis, and Malassezia furfur serovar B. The levels of immunochemical IL-1 alpha released by cultured keratinocytes during coincubations with these microbial fractions ranged from 0 to 136 pg/ml and were maximal after 72 h. No microbial fraction consistently upregulated immunochemical IL-1 alpha release by freshly isolated keratinocytes from two donors and a transformed cell line, all of which produced the cytokine constitutively to various extents. Bioassays revealed that most of the IL-1 released was biologically inactive. In contrast, whole cells of formaldehyde-treated P. granulosum and S. epidermidis significantly stimulated release of IL-1 beta by PBMCs from three donors compared with the negative control (culture medium). Release was maximal at 24 h. Coincubation with intact cells of the yeast M. furfur significantly decreased levels of IL-1 beta below the values for the negative control by PBMCs from all three donors. There was good correlation between bioassay data and immunoassay data for IL-1 beta, and the depressive effect of M. furfur cells on cytokine production by all three cultures of PBMCs was mirrored in the levels of bioactive cytokine. This reduction in IL-1 beta release by PBMCs by M. furfur may provide an explanation why dermatoses thought to be caused by this yeast are essentially noninflammatory or only mildly inflammatory.

Walton M.A. et al. *The use of aztreonam as an alternate therapy for multi-resistant Pseudomonas aeruginosa.* Burns. 1997; 23(3) : 225-7.p Abstract: The emergence of multi-resistant Gram-negative bacteria has created a most alarming clinical situation. The armamentarium of antibiotics used against this group of organisms is rapidly being depleted. Our routine therapeutic approach to control and prevent these Gram-negative bacteria from gaining a foothold was the empirical use of an aminoglycoside combined with piperacillin. However, aminoglycoside resistance is now routine rather than unusual. We evaluated the role of the monobactam aztreonam in burn wound infections and compared it to the aminoglycosides amikacin and gentamicin as well as piperacillin for the Enterobacteriacae and Pseudomonas aeruginosa. A total of 1274

Gram-negative isolates including P. aeruginosa were evaluated for susceptibility to the above-mentioned antibiotics from January 1995 to August 1995 (Table I). Among the Enterobacteriacae, aztreonam was more effective than amikacin and piperacillin (58.4 per cent vs. 45.8 per cent, respectively). However, it still fluctuated among the Enterobacteriacae as did the aminoglycosides. One major significant finding was that while susceptibility to aztreonam was variable for the Enterobacteriacae, P. aeruginosa remained 90 per cent susceptible to aztreonam and 90 per cent susceptible to piperacillin, whereas it was 79 per cent resistant to the aminoglycosides. Consequently, when choosing an antimicrobial in a suspected P. aeruginosa burn wound infection, aztreonam and piperacillin should be considered as the first line of defense.

Wang A.G. et al. *Bacterial corneal ulcer: a multivariate study.* Ophthalmologica. 1998; 212(2) : 126-32.p Abstract: A retrospective clinicomicrobiological review of 314 patients with bacterial corneal ulcers from January 1982 to December 1992 was performed. Multivariate statistical analysis was done with multiple logistic regression using PROC LOGIST of SAS statistical software. Positive cultures were grown from 134 (42.7%) of the patients. Pseudomonas aeruginosa, staphylococci, and Acinetobacter spp. were the most frequent pathogens. Significant associations between contact lens use and P. aeruginosa (odds ratio, OR 8.16), between previous herpes simplex keratitis and Streptococcus spp. (OR 18.2) were found. Acinetobacter spp. occurred more frequently in eyes with burn and/or lagophthalmos (OR 13.1/26.2). Staphylococcus aureus was associated with trauma (OR 6.27) and age under 50 (OR 5.08-13.6). Nonpseudomonal gram-negative bacilli were associated with age over 50 (OR 3.24). Drug sensitivity tests for these isolated microorganisms showed that vancomycin and ceftazidime were the most effective agents.

Wang F.D. et al. *Activity of cefepime compared with other antibiotics against gram-positive bacteria and cefuroxime-resistant gram-negative bacteria.* Chung Hua I Hsueh Tsa Chih (Taipei). 1998; 61(7) : 408-13.p Abstract: BACKGROUND: Cefepime is a new, parenteral, fourth-generation antibiotic that is stable in the presence of Bush group 1 beta-lactamases. In vitro activity of cefepime, cefuroxime, ceftazidime, ciprofloxacin and imipenem against Gram-positive cocci and cefuroxime-resistant Gram-negative bacilli was studied. METHODS: The agar dilution method described by the US National Committee for Clinical Laboratory Standards was used to determine the minimum inhibitory concentrations of antibiotics tested. These included cefepime, cefuroxime, ceftazidime, ciprofloxacin and imipenem. The tested clinical isolates included Gram-positive cocci (methicillin-sensitive coagulase-negative staphylococci, methicillin-resistant coagulase-negative staphylococci, methicillin-sensitive Staphylococcus aureus, methicillin-resistant S aureus, Streptococcus pyogenes, viridans streptococci, Streptococcus pneumoniae, group D enterococci) and cefuroxime-resistant Gram-negative bacilli (Escherichia coli, Klebsiella pneumoniae, Acinetobacter spp, Pseudomonas aeruginosa, Enterobacter cloacae, Serratia marcescens, Burkholderia cepacia and Xanthomonas maltophilia). RESULTS: The activity of cefepime against most Gram-negative bacilli other than B cepacia and X maltophilia is better than that of ceftazidime. However, cefepime is less active against these Gram-negative bacilli than ciprofloxacin and imipenem. The activity of cefepime against B cepacia and X maltophilia is less than that of ceftazidime or ciprofloxacin. Among Gram-positive cocci, cefepime was active against most isolates of methicillin-sensitive staphylococci, S pyogenes, viridans streptococci and S pneumoniae. However, cefepime has poor activity against methicillin-resistant S aureus and enterococci. CONCLUSIONS: Due to its extended spectrum of activity, cefepime has potential use as suitable empiric monotherapy for the treatment of a variety of community- and hospital-acquired infections.

Wang F.D. et al. *In vitro activity of quinupristin/dalfopristin and other antibiotics against ampicillin-resistant enterococcus faecium.* Chung Hua I Hsueh Tsa Chih (Taipei). 2000; 63(2) : 119-23.p Abstract: BACKGROUND: Enterococcus faecium constitutes approximately 10% of clinical isolates of enterococci and is noted for its antimicrobial resistance. In particular, E faecium is commonly resistant to ampicillin. The optimal treatment for severe infections caused by these multi-resistant organisms has yet to be determined. METHODS: Enterococci tested were isolated from blood, pleural fluid and cerebrospinal fluid. Ampicillin-resistant Enterococcus faecium (AREF) was identified using the API Rapid Strep Kit system. A total of 58 isolates of AREF were enrolled in this study. Ten different antibiotics were tested, including Synercid (quinupristin/dalfopristin), teicoplanin, vancomycin, ampicillin, trimethoprim/sulfamethoxazole (TMP/SMX), ciprofloxacin, gentamicin, chloramphenicol, rifampicin and tetracycline. The agar dilution method described by the National Committee for Clinical Laboratory Standards was used to determine the minimum inhibitory concentrations (MICs) of the antibiotics tested. RESULTS: Teicoplanin showed the best in vitro activity. Its MIC ranged from 0.25 to 2 micrograms/ml with an MIC90 of 1 microgram/ml. The MIC of vancomycin was 0.5-128 micrograms/ml with an MIC90 of 2 micrograms/ml. Three strains were vancomycin resistant, and they were the VanB phenotype. The MIC of quinupristin/dalfopristin was 0.5 to 8 micrograms/ml with an MIC90 of 2 micrograms/ml. Chloramphenicol and tetracycline showed moderate susceptibility. AREF showed high resistance to other antibiotics tested, including ciprofloxacin, gentamicin, TMP/SMX and rifampicin. High-level gentamicin resistance (MIC > 1,000 micrograms/ml) was found in 78% of AREF tested. CONCLUSIONS: Teicoplanin showed the best in vitro activity against AREF. Clinical studies are necessary to confirm the efficacy of quinupristin/dalfopristin in vivo.

Wang J. et al. *Alkaline-fermented foods: a review with emphasis on pidan fermentation.* Crit Rev Microbiol. 1996; 22(2) : 101-38.p Abstract: Alkaline-fermented foods constitute a group of less-known food products that are widely consumed in Southeast Asia and African countries. They can be made from different raw ingredients. For instance, Japanese natto, Thai thua-nao, and kinema are made from cooked soybeans, dawadawa from African locust beans, ogiri from melon seeds, ugba from African oil beans, kawal from fresh legale leaves, owoh from cotton seeds, and pidan from fresh poultry eggs. In alkaline-fermented foods, the protein of the raw materials is broken down into amino acids and peptides; ammonia is released during the fermentation, raising the pH of the final products and giving the food a strong ammoniacal smell. Most alkaline fermentations are achieved spontaneously by mixed bacteria cultures, principally dominated by Bacillus subtilis. In other cases, pure cultures can be used. For example, Japanese natto is inoculated with a pure culture of B. subtilis var natto. Pidan is a special example of alkaline fermentation. Instead of using microorganisms, pidan is made using an alkali-treated fermentation. Sodium hydroxide (NaOH) is produced from the reaction of sodium carbonate (Na2CO3), water (H2O), and calcium oxide (CaO) of pickle or coating mud. NaOH penetrates into the eggs, causing the physicochemical changes, color changes, and gelation. The appearance of pidan differs from fresh eggs in that the white becomes a semitransparent tea-brown color, and the yolk is solid or semisolid with a dark-green color. The nutritional value of pidan is slightly decreased compared with fresh eggs, but pidan has an extremely long shelf life and a pleasant, fragrant taste that is preferred by most people in Southeast Asian countries. In a small-scale laboratory study conducted by the authors, B. subtilis was not found in pidan. Four Staphylococcus spp. (S. cohnii, S. epidermidis, S. haemolyticus, and S. warneri) and two strains of Bacillus spp. (B. cereus and B. macerans) were isolated from pidan. Staphylococcus spp. did not contribute to the fermentation and were considered contaminants.

Wang R.C. et al. *Visual loss and central venous catheterization: cortical blindness and hemianopsia after inadvertent subclavian artery entry.* J Neuroophthalmol. 2000; 20(1) : 32-4.p Abstract: A case of presumed embolic transient ischemic episodes and multifocal infarcts to

the occipital and parietal cortices and the cerebellum of a young woman with ulcerative colitis is reported. These episodes were manifested by multifocal neurologic deficits including cortical blindness, visual hallucinations, and homonymous hemianopsia. They correlated with parenteral nutrition via a central line, presumed venous, but found to be in the subclavian artery. The complications of central venous lines are reviewed. The need for attention to neighborhood structures and unexpected symptoms, in view of the less well-recognized arterial embolic complications is emphasized.

Washington J.A. *A multicenter study of the antimicrobial susceptibility of community-acquired lower respiratory tract pathogens in the United States, 1992-1994. The Alexander Project.* Diagn Microbiol Infect Dis. 1996; 25(4) : 183-90.p Abstract: A multicenter, collaborative study was performed over a three-year period (1992-1994) to determine the antimicrobial susceptibilities of isolates of Haemophilus influenzae, Moraxella catarrhalis, and Streptococcus pneumoniae from community-acquired lower respiratory tract infections. Isolates were collected from five geographically separated medical centers in the United States and sent to a central laboratory for antimicrobial susceptibility testing. Of 350, 536, and 372 isolates of H. influenzae collected from the five centers in 1992, 1993, and 1994, 26.3%, 28.2%, and 30.1%, respectively, were beta-lactamase-positive. All isolates of H. influenzae remained susceptible to ceftriaxone, doxycycline, ciprofloxacin, and ofloxacin over the three-year period. Between 95 and 100% of isolates of H. influenzae remained susceptible to amoxicillin-clavulanic acid cefixime, clarithromycin, and chloramphenicol over this same period. The prevalence of beta-lactamase-positive isolates of M. catarrhalis increased from 92.1% in 1992 to 93.8% in 1993 and to 96.5% in 1994; however, isolates of this species were highly susceptible to amoxicillin-clavulanic acid, the cephalosporins, the macrolides, the fluoroquinolones, chloramphenicol, doxycycline, and trimethoprim-sulfamethoxazole. The prevalence of penicillin-intermediate isolates of S. pneumoniae decreased from 16% in 1992 to 8.2% in 1994, whereas that of penicillin-resistant isolates increased from 5.6% to 10.9% in the same period. Ceftriaxone susceptibility declined from 95.2% to 88.4% over the three years, whereas chloramphenicol susceptibility declined from 98.4% to 90.5% and that of trimethoprim-sulfamethoxazole declined from 85.6% to 68.7%. Macrolide activity remained unchanged.

Watanabe H. et al. *A comparative clinical study of pneumonia by penicillin-resistant and -sensitive Streptococcus pneumoniae in a community hospital.* Respirology. 2000; 5(1) : 59-64.p Abstract: OBJECTIVE: This study aimed to determine the clinical difference of pneumonia between penicillin-resistant and penicillin-sensitive Streptococcus pneumoniae. METHODOLOGY: Forty-nine cases in 46 patients of pneumococcal pneumonia were studied from December 1992 to May 1997. There were 24 cases (in 22 patients) of penicillin-resistant pneumococci (PRSP) pneumonia which were compared with 25 cases (in 24 patients) with penicillin-sensitive pneumococci (PSSP). RESULTS: Both the mean age and the underlying disease states did not differ between the two groups. However, hospital-acquired pneumonia and previous use of antibiotics were observed in eight (33.3%) and 12 (50.0%) patients in PRSP compared with three (12.0%) and two (8.0%) in PSSP, respectively. The clinical efficacy rate and bacteriological eradication rates were 87.5 and 87.5% in PRSP compared with 87.5 and 87.0% in PSSP, respectively. Minimum inhibitory concentration (MIC) of antibiotics against 30 pneumococcal isolates was examined, and 10 strains ranged from 0.10-0.78 microg/mL and five strains were more than 1.56 microg/mL against penicillin G, while the MIC showed higher resistance to other antibiotics except for the carbapenems. Serotyping of the isolates by antiserum revealed differences in the predominant types PRSP (19B, 23B) and PSSP (6B, 9C). CONCLUSIONS: We must care for not only community-acquired infection but also nosocomial transmission of PRSP pneumonia. Most patients with infections due to PRSP tended to have a milder illness with a good outcome (no patient died). As such it appears that empiric therapy for pneumococcal pneumonia does not require modification from what is recommended at present. However, in patients with infection due to highly resistant strains, and who are not responding to conventional therapy should have their treatment modified according to subsequent susceptibility testing.

Watanabe K. et al. *[Intraabdominal polymicrobial infection due to antimicrobial resistant anaerobes].* Nippon Geka Gakkai Zasshi. 1996; 97(12) : 1036-41.p Abstract: Successful treatment of surgical infections includes both the implementation of careful operative technique and the choice of appropriate antimicrobial agent. Because of advances in the techniques used for anaerobic specimen collection and culture, anaerobic bacteria are now predominantly recovered from a variety of intra-abdominal and post-operative soft tissue infection. Furthermore, some anaerobes including Bacteroides and Prevotella, like some aerobic bacteria, have acquired resistance to the commonly used antimicrobial agent. The underestimation of resistant anaerobes other than Bacteroides in infective sites may lead to incorrect choices of antimicrobial agent for empirical therapy and thus to clinical failures of therapy. Surgeons should be more interested in the polymicrobial infecting flora to improve the clinical outcome of such infections.

Waters J.H. et al. *Amniotic fluid removal during cell salvage in the cesarean section patient.* Anesthesiology. 2000; 92(6) : 1531-6.p Abstract: BACKGROUND: Cell salvage has been used in obstetrics to a limited degree because of a fear of amniotic fluid embolism. In this study, cell salvage was combined with blood filtration using a leukocyte depletion filter. A comparison of this washed, filtered product was then made with maternal central venous blood. METHODS: The squamous cell concentration, lamellar body count, quantitative bacterial colonization, potassium level, and fetal hemoglobin concentration were measured in four sequential blood samples collected from 15 women undergoing elective cesarean section. The blood samples collected included (1) unwashed blood from the surgical field (prewash), (2) washed blood (postwash), (3) washed and filtered blood (postfiltration), and (4) maternal central venous blood drawn from a femoral catheter at the time of placental separation. RESULTS: Significant reductions in the following parameters were seen when the postfiltration samples were compared to the prewash samples (median [25th-75th percentile]): squamous cell concentration (0.0 [0.0-0.1 counts/high-powered field (HPF)] vs. 8.3 counts/HPF [4. 0-10.5 counts/HPF], $P < 0.05$); bacterial contamination (0.1 [0.0-0. 2] vs. 3.0 [0.6-7.7] colony-forming units (CFU)/ml, $P < 0.01$); and lamellar body concentration (0.0 [0.0-1.0] vs. 22.0 [18.5-29.5] thousands/&mgr;l, $P < 0.01$). No significant differences existed between the postfiltration and maternal samples for each of these parameters. Fetal hemoglobin was in higher concentrations in the postfiltration sample when compared with maternal blood (1.9 [1.1-2. 5] vs. 0.5% [0.3-0.7]). Potassium levels were significantly less in the postfiltration sample when compared with maternal (1.4 [1.0-1.5] vs. 3.8 mEq/l [3.7-4.0]). CONCLUSIONS: Leukocyte depletion filtering of cell-salvaged blood obtained from cesarean section significantly reduces particulate contaminants to a concentration equivalent to maternal venous blood.

Watson R.L. et al. *Antimicrobial use for pediatric upper respiratory infections: reported practice, actual practice, and parent beliefs.* Pediatrics. 1999; 104(6) : 1251-7.p Abstract: BACKGROUND: In response to the dramatic emergence of resistant pneumococci, more judicious use of antibiotics has been advocated. Physician beliefs, their prescribing practices, and the attitudes of patients have been evaluated previously in separate studies. METHODS: This 3-part study included a statewide mailed survey, office chart reviews, and parent telephone interviews. We compared survey responses of 366 licensed pediatricians and family physicians in Georgia to recently published recommendations on diagnosis and treatment of upper respiratory infections (URIs). We further evaluated 25 randomly selected pediatricians from 119 surveyed in the Atlanta metropolitan area. For each,

charts from the first 30 patients between the ages of 12 and 72 months seen on a randomly selected date were reviewed for encounters during the preceding year. A sample of parents from each practice were interviewed by telephone. RESULTS: In the survey, physicians agreed that overuse of antibiotics is a major factor contributing to the development of antibiotic resistance (97%), and that they should consider selective pressure for resistance in their decisions on providing antibiotic treatment for URIs in children in their practices (83%). However, many reported practices do not conform to the recently published principles for judicious antibiotic use. For example, 69% of physicians considered purulent rhinitis a diagnostic finding for sinusitis; 86% prescribed antibiotics for bronchitis regardless of the duration of cough; and 42% prescribed antibiotics for the common cold. Reported practices by family physicians were more often at odds with the published principles: they were significantly more likely than pediatricians to omit pneumatic otoscopy (46% vs 25%); to omit the requirement for prolonged symptoms to diagnose sinusitis (median 4 vs 10 days); and to omit laboratory testing for pharyngitis (27% vs 14%). Of the 7531 encounters analyzed in the chart review, 43% resulted in an antibiotic prescription, including 11% of checkups, 18% of telephone calls, and 72% of visits for URIs. There was wide variability in the overall antibiotic use rates among the 25 physicians (1-10 courses per child per year). There was an even wider variability in some diagnosis-specific rates; bronchitis and sinusitis in particular. Those with the highest antibiotic prescribing rates had up to 30% more return office visits. Physicians who prescribed antibiotics for purulent rhinitis were more likely to see parents who believed that their children should be evaluated for cold symptoms. CONCLUSIONS: Physicians recognize the problem of antibiotic resistance but their reported practices are not in line with recently published recommendations for most pediatric URIs. The actual prescribing practices of pediatricians are often considerably different from their close colleagues. Patient beliefs are correlated with their own physician's practices.

Watt G. et al. *Scrub typhus infections poorly responsive to antibiotics in northern Thailand*. Lancet. 1996; 348(9020) : 86-9.p Abstract: BACKGROUND: Rickettsia tsutsugamushi, the aetiological agent of scrub typhus, is common in Asia and readily infects visitors to areas where disease transmission occurs. Rapid defervescence after antibiotic treatment is so characteristic that it is used as a diagnostic test for R tsutsugamushi infection. Reports from local physicians that patients with scrub typhus in Chiangrai, northern Thailand responded badly to appropriate antibiotic therapy prompted us to do a prospective clinical evaluation and antibiotic susceptibility testing of human rickettsial isolates. METHODS: The clinical response to doxycycline treatment in patients with early, mild scrub typhus in northern Thailand was compared with the results of treatment in Mae Sod, western Thailand. Prototype and naturally occurring strains of R tsutsugamushi were tested for susceptibility to chloramphenicol and doxycycline in mice and in cell culture. FINDINGS: By the third day of treatment, fever had cleared in all seven patients from Mae Sod, but in only five of the 12 (40%) from Chiangrai ($p < 0.01$). Median fever clearance time in Chiangrai (80 h; range 15-190) was significantly longer than in Mae Sod (30 h; range 4-58; $p < 0.005$). Conjunctival suffusion resolved significantly more slowly in Chiangrai ($p < 0.05$). Antibiotics prevented death in mice infected by Chiangrai strains of R tsutsugamushi less often than after infection by the prototype strain ($p < 0.05$). Only one of three Chiangrai strains tested in cell culture was fully susceptible to doxycycline. INTERPRETATION: Chloramphenicol-resistant and doxycycline-resistant strains of R tsutsugamushi occur in Chiangrai, Thailand. This is the first evidence of naturally occurring antimicrobial resistance in the genus Rickettsia.

Wawerla M. et al. *Impedance microbiology: applications in food hygiene.* J Food Prot. 1999; 62(12) : 1488-96.p Abstract: Impedance microbiology is a rapid method that enables qualitative and quantitative tracing of microorganisms by measuring the change in the electrical conductivity. With direct impedance technology, the change in the conductivity of a liquid culture medium serves as a measuring parameter, whereas with indirect impediometry, the change in the electrical conductivity of a reaction solution, which occurs through the absorption of gases from the inoculated bacterial culture, is measured. Most investigations concerning the applicability of impediometry in food microbiology deal with the impedimetric detection or enumeration of Enterobacteriaceae, especially the detection of Salmonella. However, impediometry has been applied to other bacterial groups or species as well. Furthermore, a great number of published findings concern the impedimetric determination of the total bacterial count. The successful application of this fast method on further areas of food hygiene, such as tracing antibiotics and testing additives for their antimicrobiological effect, has also been described. In general the use of impediometry for the application areas stated has been judged positively. However, the time and expense required by the user to optimize the method, the deficits when testing slightly contaminated sample material or determining the bacterial count in those cases in which the microorganisms are sublethally damaged, and the necessity of performing individual calibration for each food category limit the applicability of impediometry.

Webb A.K. *The treatment of pulmonary infection in cystic fibrosis.* Scand J Infect Dis Suppl. 1995; 96 : 24-7.p Abstract: The survival of cystic fibrosis patients has improved through an aggressive, multidisciplinary approach to the therapy of pulmonary sepsis. Intravenous antibiotics play a major role in the care of cystic fibrosis patients, even though it is not possible to achieve persistent bacterial eradication due to the complex microbiology and pathology of these patients. The most important pathogen in older patients is Pseudomonas aeruginosa. The increasing incidence of Pseudomonas cepacia, strains of which can be highly resistant to many antibiotics, also represents an important challenge to the efficacy of antibiotic therapy. Choice of appropriate antimicrobial therapy is hampered by the fact that a single patient may harbour several different pseudomonas phenotypes with variable resistance patterns. Carbapenem antibiotics possess a wide range of activity against most Gram-negative and Gram-positive bacteria and are therefore a useful addition to the antimicrobial armamentarium available to the clinician. The new carbapenem meropenem is well tolerated at high doses by both children and adults. Results from a comparative trial against ceftazidime suggests that meropenem has a place in the management of cystic fibrosis.

Webb B.C. et al. *Effectiveness of two methods of denture sterilization.* J Oral Rehabil. 1998; 25(6) : 416-23.p Abstract: Species of Candida and in particular Candida albicans may be involved in the aetiology of denture stomatitis. Studies have shown that Candida and other oral micro-organisms including Streptococcus gordonii are associated with denture plaque; hence denture hygiene is an important factor in the prevention and treatment of the disease. The aim of this investigation was to test in vitro the efficacy of two methods of denture sterilization: (1) microwave irradiation and (2) sodium hypochlorite soak. Twenty upper acrylic dentures were prepared for microbiological assay; 10 were inoculated with C. albicans H1 and 10 with S. gordonii LGR2. Within each group, five dentures were tested in a domestic microwave oven for optimal exposure time and temperature to ensure sterilization; the five control dentures were not microwaved. Microbiological analyses showed that the inoculated dentures became sterile after six min of irradiation at medium setting (2450 MHz, 350 W). Damage to the microorganisms after microwave irradiation was clearly visible by scanning electron microscopy (SEM). Following the same protocol as above, experimental dentures were soaked for 8 h in either 0.02%, or 0.0125% sodium hypochlorite solution and control dentures soaked in distilled water. Microbiological analyses showed that the experimental dentures inoculated with C. albicans H1 became sterile. By contrast, those inoculated with S. gordonii LGR2 did not become sterile, and the SEM procedures confirmed these findings. The results of this

study indicate that microwaving may be a more effective method of denture sterilization than denture soaking in sodium hypochlorite. However, compared with microwaving, hypochlorite reduces the levels of residual non-viable micro-organisms attached to the denture surface.

Weber G. et al. *Changing trends in frequency and antimicrobial resistance of urinary pathogens in outpatient clinics and a hospital in Southern Israel, 1991-1995.* Eur J Clin Microbiol Infect Dis. 1997; 16(11) : 834-8.p Abstract: In order to monitor changes in the frequency and antimicrobial resistance of urinary pathogens over several years, urinary cultures received from outpatient clinics and from a hospital during a period of one month each in 1991 and 1995 were analyzed at a clinical microbiology laboratory. In 1991 and 1995, 1366 and 1534 significant monomicrobic cultures respectively were reviewed. The frequency of Escherichia coli dropped significantly in the outpatient clinics from 70.5% to 61.2% ($p < 0.0001$). The frequency of Proteus mirabilis, Morganella morganii, Pseudomonas aeruginosa and other gram-negative bacteria also decreased, but the frequency of Klebsiella spp. and Enterobacter spp. increased from 2.6% to 5.8% ($p < 0.0001$). In the hospital, the frequency of Enterobacter spp. ($p < 0.04$), Escherichia coli and Morganella morganii declined from 1991 to 1995, whereas the frequency of Pseudomonas aeruginosa ($p = 0.001$), Acinetobacter spp. ($p < 0.05$), Klebsiella spp., Proteus mirabilis and other gram-negative rods increased considerably. The frequency of gram-positive aerobic bacteria rose markedly in outpatient specimens from 6.1% to 13.5% ($p < 0.0001$), while a decline from 14.4% to 9.3% was noted in hospital specimens ($p < 0.02$). A significant rise in the resistance of Escherichia coli to gentamicin and ciprofloxacin ($p < 0.0001$) was detected in outpatient isolates. In the hospital, gram-negative urinary pathogens demonstrated increased resistance to ampicillin ($p = 0.042$), cefuroxime ($p = 0.005$), gentamicin ($p = 0.002$) and ciprofloxacin ($p < 0.0001$) during the study period. The changing etiology of urinary tract infections and the increasing resistance of organisms indicate that periodic monitoring and possibly also modification of empirical therapy are required.

Weber P. et al. *[Retinitis pigmentosa, terminal renal insufficiency and Caroli syndrome: new associations with Opitz trigonocephaly syndrome].* Klin Padiatr. 2000; 212(1) : 31-4.p Abstract: We report on a new patient with Opitz trigonocephaly syndrome. In addition to the findings typical of this mental retardation syndrome, the present patient has retinitis pigmentosa, Caroli's syndrome and renal failure, which is undergoing hemodialysis. This association is never observed before in patients with Opitz trigonocephaly syndrome. This case demonstrate, that with increased survival of patients with mental retardation syndromes, the phenotypes possible are modified.

Weerheijm K.L. et al. *Bacterial counts in carious dentine under restorations: 2-year in vivo effects.* Caries Res. 1999; 33(2) : 130-4.p Abstract: Little is known about the long-term effects of fluoride-releasing materials on carious dentine in vivo. The aim was to investigate the 2-year influence of a resin-modified glass ionomer cement (RM-GIC) and amalgam on the bacteriological counts of carious dentine that remained under class I restorations. To enable a split-mouth design, 33 molar pairs in 33 patients (mean age 15.1 years, SD 1.4) were selected, based on clinically and radiographically diagnosed occlusal dentine caries. The enamel of the carious molars was removed, and the carious dentine was sampled under aseptic conditions just beneath the dentinoenamel junction. The molars were alternately restored with RM-GIC or amalgam without further removal of carious dentine. The samples were processed for microbiological determination of total viable counts (TVC), mutans streptococci (MS), and lactobacilli (LB). The molar pairs of 25 patients were reevaluated after 2 years using the same clinical techniques and were permanently restored after complete caries removal. Both materials showed a substantial decrease in numbers of TVC and LB of the carious dentine after the 2-year period. Compared to amalgam, the decrease in the numbers of LB was significantly more pronounced for RM-GIC. No microorganisms were detected in only 11 molars (6 RM-GIC and 5 amalgam) after the 2-year period. Based on this study, we suggest that complete removal of carious dentine is still the best conservative treatment, irrespective of the restorative material used.

Wegener H.C. et al. *Use of antimicrobial growth promoters in food animals and Enterococcus faecium resistance to therapeutic antimicrobial drugs in Europe.* Emerg Infect Dis. 1999; 5(3) : 329-35.p Abstract: Supplementing animal feed with antimicrobial agents to enhance growth has been common practice for more than 30 years and is estimated to constitute more than half the total antimicrobial use worldwide. The potential public health consequences of this use have been debated; however, until recently, clear evidence of a health risk was not available. Accumulating evidence now indicates that the use of the glycopeptide avoparcin as a growth promoter has created in food animals a major reservoir of Enterococcus faecium, which contains the high level glycopeptide resistance determinant vanA, located on the Tn1546 transposon. Furthermore, glycopeptide-resistant strains, as well as resistance determinants, can be transmitted from animals to humans. Two antimicrobial classes expected to provide the future therapeutic options for treatment of infections with vancomycin-resistant enterococci have analogues among the growth promoters, and a huge animal reservoir of resistant E. faecium has already been created, posing a new public health problem.

Wei G.X. et al. *Proteolysis and utilization of albumin by enrichment cultures of subgingival microbiota.* Oral Microbiol Immunol. 1999; 14(6) : 348-51.p Abstract: Subgingival dental plaque consists mainly of microorganisms that derive their energy from amino acid fermentation. Their nutrient requirements are met by the subgingival proteolytic system, which includes proteases from microorganism and inflammatory cells, and substrate proteins from sulcus exudate, including albumin. To determine the selective effect of individual proteins on microbiota, we used albumin as the main substrate for growth. Eight subgingval plaque samples from untreated periodontal pockets of patients with adult periodontitis were inoculated in peptone yeast medium with bovine albumin (9 g/l). After three subculture steps, cell yields of the enrichment cultures at the medium with 0, 1.25, 2.5, 5, 10, and 20 g/l albumin were determined. Proteolytic activity (U/absorbance at 550 nm) of the enrichment cultures and different isolates derived from the cultures was estimated by the degradation of resorufin-labeled casein. It was observed that the yield of the mixed culture was albumin limited, and the proteolytic activities of the cultures in albumin broth were higher than in control (peptone broth). Among the isolates from the enrichment cultures, Peptostreptococcus micros, Prevotella melaninogenica, Prevotella buccae and Prevotella bivia demonstrated proteolysis. The frequent occurrence of Streptococcus gordonii and Streptococcus anginosus in the albumin cultures is explained by their ability to utilize arginine as an energy source for growth. Albumin in the medium was partly degraded by pure cultures but completely consumed in enrichment cultures, indicating synergy of bacterial proteinases. It is concluded that the subgingival microbiota possesses proteolytic activity and may use albumin as a substrate for their growth. Enrichment cultures on albumin may serve as a relatively simple in vitro model to evaluate the effects of proteinase inhibitors.

Weig H.J. et al. *Enhanced cardiac contractility after gene transfer of V2 vasopressin receptors In vivo by ultrasound-guided injection or transcoronary delivery.* Circulation. 2000; 101(13) : 1578-85.p Abstract: BACKGROUND: Systemic levels of arginine vasopressin (AVP) are increased in congestive heart failure, resulting in vasoconstriction and reduced cardiac contractility via V(1) vasopressin receptors. V(2) vasopressin receptors (V2Rs), which promote activation of adenylyl cyclase, are physiologically expressed only in the kidney and are absent in the myocardium. Heterologous expression of V2Rs in the myocardium could result in a positive inotropic effect by using the endogenous high concentrations of AVP in heart failure. METH-

ODS AND RESULTS: We tested gene transfer with a recombinant adenovirus for the human V2R (Ad-V2R) to stimulate contractility of rat or rabbit myocardium in vivo. Ultrasound-guided direct injection or transcoronary delivery of adenovirus in vivo resulted in recombinant receptor expression in the myocardial target area, leading to a substantial increase in [(3)H]AVP binding. In 50% of the cardiomyocytes isolated from the directly injected area, single-cell shortening measurements detected a significant increase in contraction amplitude after exposure to AVP or the V2R-specific desmopressin (DDAVP). Echocardiography of the target myocardial area documented a marked increase in local fractional shortening after systemic administration of DDAVP in V2R-expressing animals but not in control virus-treated hearts. Simultaneous measurement of global contractility (dP/dt(max)) confirmed a positive inotropic effect of DDAVP on left ventricular function in the Ad-V2R-injected animals. CONCLUSIONS: Adenoviral gene transfer of the V2R into the myocardium increases cardiac contractility in vivo. Heterologous expression of cAMP-forming receptors in the myocardium could lead to novel strategies in the therapy of congestive heart failure by bypassing the desensitized beta-adrenergic receptor-signaling cascade.

Weiger R. et al. *Deposition and retention of vital and dead Streptococcus sanguinis cells on glass surfaces in a flow-chamber system*. Arch Oral Biol. 1999; 44(8) : 621-8.p Abstract: The proportion of vital as compared with dead Streptococcus sanguinis cells attached to glass surfaces was monitored and related to varying proportions of planktonic vital as compared with dead Strep. sanguinis cells. In a flow chamber with six parallel-mounted glass plates, Strep. sanguinis was suspended in pretreated sterile human saliva. Deposition of Strep. sanguinis took place, with a proportion of vital sanguinis streptococci in saliva (%VSs) of 90%, 45% or 22.5%. After exposure times of 30, 60, 90, 120 and 240 min, adherent microorganisms were labelled with two fluorescence stains to differentiate between vital and dead bacteria. Proportions of vital attached streptococci (%VSa) were determined microscopically. Dead bacteria were detected on all glass plates. The %VSa at 30 min and 60 min was significantly lower than the baseline %VSs. During the course of a single run the %VSa frequently increased after either 30, 60 or 90 min without exceeding the %VSs at 4 h. %VSs was the only variable exerting a significant effect on %VSa at 30 and 60 min. It is suggested that during the initial events of microbial attachment the dead rather than vital Strep. sanguinis cells attach preferably to solid surfaces.

Weiger R. et al. *Microbial flora of sinus tracts and root canals of non-vital teeth*. Endod Dent Traumatol. 1995; 11(1) : 15-9.p Abstract: The occurrence of bacteria in 12 endodontically induced periodontal lesions associated with sinus tracts was examined. The microbial flora encountered in the sinus tract was compared with that of the root canal of the involved teeth which had not experienced any prior endodontic therapy. All microbiological samples taken from the sinus tract and from the root canal system contained bacteria. Seventy-one strains were detected in the extraradicular lesions. Of the anaerobic species, Fusobacterium nucleatum (7 strains), Prevotella intemedia (4 strains) and P. oralis (4 strains) were most frequently found. In the group of the facultative anaerobes Streptococcus spp. were predominant. Ninety-four strains were isolated from the root canal system of the 12 teeth. P. intermedia (6 strains), P. buccae (5 strains), F. nucleatum (5 strains) and Lactobacillus plantarum (5 strains) were most common. In 9 cases, species present in the root canal could be revealed in the extraradicular lesions. It was concluded that a variety of microorganisms were capable of colonizing endodontically induced, extraradicular lesions clinically characterized by sinus tracts.

Weinberger M. et al. *Increasing fungal isolation from clinical specimens: experience in a university hospital over a decade*. J Hosp Infect. 1997; 35(3) : 185-95.p Abstract: The local patterns of fungal isolates were studied by a retrospective analysis of fungal species isolated from clinical specimens in a university hospital in Jerusalem. Between 1984 and 1993, 5630 fungi [4071 patient unique isolates (PUI)] were isolated and identified. During the study decade, the annual incidence of all isolates increased 2.7-fold, and PUI increased 1.6-fold. Candida albicans accounted for 61% of PUI; urine was the source of 53%. The intensive care units (ICUs) and the Bone Marrow Transplantation (BMT) Department had the highest incidence of fungal isolation. The following trends were observed: (1) a decrease in the relative frequency of C. albicans and increase in Candida tropicalis; (2) increased number of isolates from urine, surgical wounds and intra-abdominal sites; (3) increased number of isolates from ICUs and BMT. Fungi are emerging as important hospital-acquired pathogens in tertiary care and teaching hospitals, and are associated with high rates of morbidity and mortality. It is important to be familiar with the local patterns of fungal isolation in order to improve treatment.

Weingarten C.M. et al. *Evaluation of Acinetobacter baumannii infection and colonization, and antimicrobial treatment patterns in an urban teaching hospital*. Pharmacotherapy. 1999; 19(9) : 1080-5.p Abstract: In 1990 there was a sudden increase in the incidence of colonization and infection due to Acinetobacter baumannii (AB) in our intensive care units (ICUs). The isolates were multiply resistant to beta-lactam and aminoglycoside antibiotics, but remained susceptible to imipenem, amikacin, and ampicillin-sulbactam. We examined the frequency of infection and colonization with AB and the effects of increased imipenem and amikacin therapy on Pseudomonas aeruginosa. We also used disease-matched controls to determine the clinical and financial impacts of treating colonization. All patients with at least one AB isolate from January-December 1992 were identified retrospectively and classified as infected or colonized based on published Centers for Disease Control criteria; the control group was selected from a computerized medical records data base matching primary diagnostic codes (102 patients both groups). The 102 patients yielded 140 isolates, 124 resistant AB and 16 sensitive AB. Thirty three patients were infected, 69 colonized. Mortality correlated with APACHE II scores. Patients acquired the organism approximately 2 weeks after admission; they had a mean ICU stay of 27.35 days, compared with 5.53 days for controls. Patients with positive AB cultures required significantly more use of ventilators than those with negative AB cultures. They also had significantly longer hospital stay, more bed transfers, greater duration and number of antibiotics, and higher hospital and pharmacy charges. Unnecessary treatment for colonization with either imipenem or amikacin resulted in a substantial decrease of P. aeruginosa susceptibility to each agent. The financial impact of treating colonization was significant and is a potential area for cost avoidance. Our results emphasize the need to extubate and move patients to non-ICU beds as soon as possible to decrease the risk of nosocomial infection. It also highlights the need to avoid treating colonization, thus avoiding unnecessary antibiotic therapy.

Weinstein M.P. et al. *Controlled evaluation of BacT/Alert standard aerobic and FAN aerobic blood culture bottles for detection of bacteremia and fungemia*. J Clin Microbiol. 1995; 33(4) : 978-81.p Abstract: A new medium, FAN, designed to enhance the recovery of microorganisms, has been developed for the BacT/Alert blood culture system (Organon Teknika Corp., Durham, N.C.). We compared the yield and speed of detection of microorganisms in 6,847 adequately filled paired aerobic standard and FAN bottles at four university hospitals. Of 499 clinically significant microorganisms isolated from one or both bottles, significantly more Staphylococcus aureus isolates ($P < 0.001$), coagulase-negative staphylococci ($P < 0.001$), yeasts ($P < 0.01$), and all microorganisms combined ($P < 0.001$) were recovered from the FAN bottles. Overall, the speeds of detection of positive cultures did not differ between the two medium formulations; mean times to detection in the standard and FAN bottles were 16.1 and 16.0 h, respectively. When a subset of patients on antimicrobial therapy was evaluated, significantly enhanced yield from the FAN bottle was evident for staphylococci. Overall, the FAN bottle outperformed the standard aerobic BacT/Alert bottle.

Weinstein R.A. *Nosocomial infection update.* Emerg Infect Dis. 1998; 4(3) : 416-20.p Abstract: Historically, staphylococci, pseudomonads, and Escherichia coli have been the nosocomial infection troika; nosocomial pneumonia, surgical wound infections, and vascular access-related bacteremia have caused the most illness and death in hospitalized patients; and intensive care units have been the epicenters of antibiotic resistance. Acquired antimicrobial resistance is the major problem, and vancomycin-resistant Staphylococcus aureus is the pathogen of greatest concern. The shift to outpatient care is leaving the most vulnerable patients in hospitals. Aging of our population and increasingly aggressive medical and surgical interventions, including implanted foreign bodies, organ transplantations, and xenotransplantation, create a cohort of particularly susceptible persons. Renovation of aging hospitals increases risk of airborne fungal and other infections. To prevent and control these emerging nosocomial infections, we need to increase national surveillance, "risk adjust" infection rates so that interhospital comparisons are valid, develop more noninvasive infection-resistant devices, and work with health-care workers on better implementation of existing control measures such as hand washing.

Weiss I. et al. *Serotyping and susceptibility to macrolides and other antimicrobial drugs of Streptococcus pyogenes isolated from patients with invasive diseases in southern Israel.* Eur J Clin Microbiol Infect Dis. 1997; 16(1) : 20-3.p Abstract : Fifty-seven strains of Streptococcus pyogenes isolated from septic patients and 52 isolates from nonbacteremic patients in southern Israel were investigated for their susceptibility to new macrolides and other antimicrobial drugs. In addition, typing of the isolates by M protein and T antigen was performed. All organisms were susceptible to penicillin and chloramphenicol, 59% to tetracycline, and 7% to trimethoprim-sulfamethoxazole. All isolates but one (99%) were susceptible to clarithromycin, azithromycin, erythromycin, and clindamycin. The MIC90 of clarithromycin, erythromycin, and clindamycin was 0.064, 0.125, and 0.094 microgram/ml, respectively. Overall, 96% of the isolates could be typed by T antigen, but only 43% were M-protein typeable. No predominance of any particular M-protein type was observed. No significant differences between blood isolates and organisms derived from other sources were observed in the antibiotic susceptibility patterns or the distribution of serotypes. It is concluded that invasive Streptococcus pyogenes infections in southern Israel are caused by multiple unrelated strains. The organism remains susceptible to macrolides and clindamycin.

Weiss K. et al. *Routine susceptibility testing of four antibiotic combinations for improvement of laboratory guide to therapy of cystic fibrosis infections caused by Pseudomonas aeruginosa.* Antimicrob Agents Chemother. 1995; 39(11) : 2411-4.p Abstract: Previous studies have demonstrated synergy between an aminoglycoside and a beta-lactam for treating Pseudomonas aeruginosa infections. Cystic fibrosis patients are prone to infection by this bacterium, which becomes very resistant with recurrent antibiotic treatments. The purpose of this study was to evaluate the susceptibility patterns of 122 isolates of P. aeruginosa isolated from cystic fibrosis patients to five individual antibiotics (tobramycin, ceftazidime, piperacillin, ticarcillin, and imipenem) and to four antibiotic combinations (tobramycin associated with one of the other antibiotics). Strains were selected because of their resistance to individual antimicrobial agents, which ranged from 21.3% for imipenem to 56.5% for tobramycin. By using an automated broth microdilution method, we were able to demonstrate synergy against 39 strains (32%) with tobramycin-ticarcillin, against 38 strains (31%) with tobramycin-piperacillin, against 47 strains (39%) with tobramycin-ceftazidime, and against 23 strains (19%) with tobramycin-imipenem. Of the 122 isolates, 77 (63%) were rendered significantly susceptible to at least one of the four antibiotic combinations by synergy. These results suggest that when appropriate technology is available, susceptibility to antibiotic combinations greatly improves the guide to antibiotic therapy for infections due to P. aeruginosa in cystic fibrosis patients.

Weitzul S. et al. *Nontuberculous mycobacterial infections of the skin.* Dermatol Clin. 2000; 18(2) : 359-77, xi-xii.p Abstract: Nontuberculous mycobacteria are playing an increasingly important role in human disease owing to higher prevalence of antibiotic resistance and immunodeficiency. These organisms cause a variety of cutaneous findings which are often misdiagnosed by the clinician. Compounding this problem is the fact that most mycobacteria require special culture conditions, which if not specifically requested, are frequently not used. Recognition of susceptible patients is imperative and is not limited to the immunocompromised. Successful treatment of mycobacterial infections requires knowledge of currently available and recommended antibiotics followed by tailoring of the antimicrobial regimen after sensitivity testing is performed.

Wendt C. et al. *Survival of Acinetobacter baumannii on dry surfaces.* J Clin Microbiol. 1997; 35(6) : 1394-7.p Abstract: Acinetobacter spp. have frequently been reported to be the causative agents of hospital outbreaks. The circumstances of some outbreaks demonstrated the long survival of Acinetobacter in a dry, inanimate environment. In laboratory experiments, we compared the abilities of five Acinetobacter baumannii strains, three Acinetobacter sp. strains from the American Type Culture Collection (ATCC), one Escherichia coli ATCC strain, and one Enterococcus faecium ATCC strain to survive under dry conditions. Bacterial solutions of the 10 strains were inoculated onto four different material samples (ceramic, polyvinyl chloride, rubber, and stainless steel) and stored under defined conditions. We investigated the bacterial counts of the material samples immediately after inoculation, after drying, and after 4 h, 1 day, and 1, 2, 4, 8, and 16 weeks of storage. A statistical model was used to distribute the 40 resulting curves among four types of survival curves. The type of survival curve was significantly associated with the bacterial strain but not with the material. The ability of the A. baumannii strains to survive under dry conditions varied greatly and correlated well with the source of the strain. Strains isolated from dry sources survived better than those isolated from wet sources. An outbreak strain that had caused hospital-acquired respiratory tract infections survived better than the strains from wet sources, but not as well as strains from dry sources. Resistance to dry conditions may promote the transmissibility of a strain, but it is not sufficient to make a strain an epidemic one. However, in the case of an outbreak, sources of Acinetobacter must be expected in the dry environment.

Wenisch C. *[Pharmacokinetic effects of antibiotics on the development of bacterial resistance particularly in reference to azithromycin].* Wien Med Wochenschr. 2000; 150(3) : 37-41.p Abstract: Antibiotics reduce the mortality from infectious diseases but not the prevalence of these diseases. Use, and often abuse, of antimicrobial agents encourages the evolution of bacteria toward resistance, often resulting in therapeutic failure. There are two factors which influence potential utility of a drug in a specific clinical situation. The first is the measure of potency of the antibiotic for the pathogen in question (minimal inhibitory concentration [MIC], minimal bactericidal concentration [MBC]). The second is whichever relationship between the concentration-time profile and potency of the antibiotic linked most robustly to clinical outcome (time above MIC or MBC [T > MIC or T > MBC]; Peak/MIC or MBC; area under the curve [AUC]/MIC or AUC/MBC). Herein the effects of pharmacokinetics of antimicrobials on the evolution of antimicrobial resistance with particular reference to azithromycin are considered.

Werk L.N. et al. *Practical considerations when treating children with antimicrobials in the outpatient setting.* Drugs. 1998; 55(6) : 779-90.p Abstract: Over the past decade new antimicrobial agents have been introduced used to treat common paediatric infectious diseases such as acute otitis media and sinusitis. These agents vary with respect to their mechanism of action, dosage and duration of therapy, cost, taste and type of adverse effects. More recently, there has been concern about

the overuse of antibiotics and increasing bacterial resistance, particularly Streptococcus pneumoniae, to these agents. Dosage and duration of therapy, cost, taste, and adverse effects play important roles in determining success or failure of antimicrobial medications in paediatric patients. Use of potential alternatives and adjuncts to antimicrobial treatment, such as vaccination, control of environmental risk factors, surgical techniques and alternative medical therapies may also be employed, and the practitioner must ascertain if their paediatric patients are being treated by any of these methods. Rather than listing the therapeutic challenges for all common outpatient paediatric infectious diseases, acute otitis media (accounting for over 50% of the antimicrobial prescriptions dispensed in childhood) is used to illustrate each issue. Clinicians are faced with a growing number of possible antimicrobial choices; concomitantly, there is increasing concern that these agents are overused. When prescribing antimicrobial agents, we need to be familiar with what we can do to optimise the care we provide. By avoiding inappropriate or trivial use of antimicrobials, we can preserve and even strengthen our armamentarium against disease. Simple strategies can improve compliance with therapeutic regimens and improve parental satisfaction.

West K.H. et al. *Standard precautions—a new approach to reducing infection transmission in the hospital setting.* J Intraven Nurs. 1997; 20(6 Suppl) : S7-10.p Abstract: Hospital-acquired infections with drug-resistant organisms, such as methicillin-resistant Staphylococcus aureus, pose threats to healthcare workers and patient safety. Authors discuss the Centers for Disease Control and Prevention (CDC) guidelines that introduced "Standard Precautions." Proposed in 1996, the Standard Precautions guidelines are a new, two-tiered approach to infection control. These CDC guidelines take a broader approach than Universal Precautions, offering infection control precautions that are standard for all patients and include bloodborne, airborne, and epidemiologically important pathogens. Specific applications of Standard Precautions and implications for IV therapy nurses are presented.

Wexler H.M. *Pore-forming molecules in gram-negative anaerobic bacteria*. Clin Infect Dis. 1997; 25 Suppl 2 : S284-6.p Abstract: Little information is available about porin molecules in anaerobes. Porins from Bacteroides fragilis and Porphyromonas, Fusobacterium, and Campylobacter species have been described. A pore-forming outer membrane (OM) porin protein was isolated from B. fragilis (Omp-200); it is exposed at the cell surface and dissociated by boiling and application of reducing agents. Fusobacterium nucleatum FomA, an OM porin protein of 40 kD, had a deduced topology of FomA similar to that of established porins, despite the lack of sequence similarity. An OM preparation from Porphyromonas endodontalis (including a major protein with an apparent molecular mass of 31 kD and other proteins of 40.3-71.6 kD) formed pores in a liposome assay. A major outer membrane protein (MOMP) from Campylobacter jejuni (a microaerophile) is related to the family of trimeric bacterial porins, although little homology was seen with other porins. The development of antimicrobial resistance related to decreased permeability underlines the importance of identifying and characterizing the pore-forming molecules of anaerobes.

Wexler H.M. et al. *Current susceptibility patterns of anaerobic bacteria.* Yonsei Med J. 1998; 39(6) : 495-501.p Abstract: While antibiotic resistance among anaerobes continues to increase, the frequency of antimicrobial susceptibility testing for anaerobes is declining. Because anaerobic infections are often mixed and detailed bacteriology of the organisms involved may take some time, physicians must institute empiric therapy before susceptibility testing results are available. Also, economic realities and prudent use of resources mandate that careful consideration be given to the necessity for routine susceptibility testing of anaerobic bacteria. Determination of appropriate therapy can be based on published antibiograms; however, since patterns may vary within geographic regions and even within hospitals, it is strongly recommended that each hospital center periodically test their isolates to determine local patterns and detect any pockets of resistance. As a general guide, antibiograms from the last several years of susceptibility testing at the Wadsworth Anaerobe Laboratory are reported.

Wexler H.M. et al. *Comparison of spiral gradient endpoint and agar dilution methods for susceptibility testing of anaerobic bacteria: a multilaboratory collaborative evaluation*. J Clin Microbiol. 1996; 34(1) : 170-4.p Abstract: A multilaboratory collaborative study was carried out to assess the utility of the spiral gradient endpoint (SGE) method for the determination of the antimicrobial susceptibilities of anaerobes and to evaluate the equivalence of the MICs obtained by the SGE method with those obtained by the reference agar dilution method of the National Committee for Clinical Laboratory Standards. The standard deviation of the MIC obtained by the SGE method for the five participating laboratories was +/- 0.26 of a twofold dilution, whereas it was +/- 1 twofold dilution by the reference method. The interlaboratory reproducibility of the results for two control strains tested with imipenem, chloramphenicol, and metronidazole indicated that 96% of the measurements fell within +/- 1 twofold dilution of the mode. The equivalence of the SGE method with the agar dilution method was assessed with a wide variety of anaerobic organisms. The MICs by both methods were within 1 doubling dilution in 93% of the measurements (n = 1,074). Discrepancies generally occurred with those organism-drug combinations that resulted in tailing endpoints (Fusobacterium nucleatum, 86% agreement) or in cases of light growth (Peptostreptococcus spp., 86% agreement).

White A.C. Jr et al. *Effects of requiring prior authorization for selected antimicrobials: expenditures, susceptibilities, and clinical outcomes.* Clin Infect Dis. 1997; 25(2) : 230-9.p Abstract: Antimicrobial control programs are widely used to decrease drug expenditures, but effects on antimicrobial resistance and outcomes for patients are unknown. When a requirement for prior authorization for selected parenteral antimicrobial agents was initiated at our urban, county teaching hospital, total parenteral antimicrobial expenditures decreased by 32%. Susceptibilities to all beta-lactam and quinolone antibiotics increased, with dramatic increased susceptibilities in isolates recovered in intensive care units, increased susceptibilities in isolates recovered in other inpatient sites, and little change in susceptibilities in isolates recovered in outpatient sites despite no change in infection control practices. For patients with bacteremia due to gram-negative organisms, overall survival did not change with restrictions. No differences occurred in the median time from initial positive blood culture to receipt of an appropriate antibiotic or in the median time from positive blood culture to discharge from the hospital. Thus, requiring preapproval for selected parenteral agents can decrease antimicrobial expenditures and improve susceptibilities to antibiotics without compromising patient outcomes or length of hospital stay.

Whittington W.L. et al. *Susceptibilities of Neisseria gonorrhoeae to the glycylcyclines.* Antimicrob Agents Chemother. 1995; 39(8) : 1864-5.p Abstract: To assess the activities of two glycylcyclines, N,N-dimethylglycylamido (DMG) derivatives of minocycline (MINO) and 6-demethyl-6-deoxytetracycline (DMDOT), 203 gonococcal isolates recovered at six sexually transmitted disease clinics in the western United States were evaluated. Antimicrobial susceptibilities to tetracycline HCl, doxycycline, MINO, DMG-DMDOT, and DMG-MINO were determined by agar dilution tests. DMG-DMDOT and DMG-MINO were more active than tetracycline HCl, doxycycline, or MINO regardless of the presence of Tet M or of chromosomal mutations mediating tetracycline resistance ($P < 0.001$).

Wichelhaus T.A. et al. *Rapid detection of epidemic strains of methicillin-resistant Staphylococcus aureus.* J Clin Microbiol. 1999; 37(3) : 690-3.p Abstract: Fifty methicillin-resistant Staphylococcus aureus (MRSA) initial isolates obtained from patients hospitalized in the orthopedic

clinic of the Frankfurt University Hospital and 150 methicillin-sensitive Staphylococcus aureus (MSSA) isolates were investigated in this study to determine whether the Slidex Staph-Kit is capable of differentiating between MRSA and MSSA owing to its unique performance characteristics. The Slidex Staph-Kit is a combined latex hemagglutination test designed to detect clumping factor, protein A, and a specific surface immunogen for S. aureus. Clumping factor-positive strains cause erythrocytes sensitized with fibrinogen to hemagglutinate, thereby resulting in visible red clumps. S. aureus strains deficient in clumping factor agglutinate latex particles sensitized with specific antibodies against surface proteins of S. aureus, thereby resulting in visible white clumps. Our results demonstrate that white clumping has a 99% specificity as well as a 98% positive predictive value for MRSA. Clumping factor-negative MRSA, which have been reported to occur in several countries, are epidemic in the Frankfurt area and account for 80% of all MRSA initial isolates in the orthopedic clinic of the Frankfurt University Hospital. Genotyping of all MRSA isolates by macrorestriction analysis of chromosomal DNA revealed that 83% of clumping factor-negative MRSA are closely related to the "southern-German" epidemic strain. This is the first study demonstrating the Slidex Staph-Kit's capability for identifying epidemic clumping factor-negative S. aureus strains as methicillin resistant even prior to antimicrobial susceptibility testing.

Wichen, H.v. et al. *Es tiempo de actuar: La situación del VIH/SIDA en Nicaragua* ; Managua. UNFPA. 1995; 88.p Abstract: El documento está estructurado en seis capítulos: El primer capítulo presenta la situación epidemilógica del VIH/SIDA en Nicaragua. En el segundo capítulo son tomados en consideración los diferentes factores socioculturales que influyen en el riesgo de adquirir el VIH. El tercer capítulo trata los diferentes comportamientos y prácticas de riesgo, que en parte son el resultado de los factores socioculturales mencionados. Los diferentes actores sociales e institucionales en la lucha contra el VIH/SIDA son discutidos en el cuarto capítulo.Finalemente se presentan las conclusiones y algunas recomendaciones..

Widdowson C.A. et al. *Molecular mechanisms of resistance to commonly used non-betalactam drugs in Streptococcus pneumoniae.* Semin Respir Infect. 1999; 14(3) : 255-68.p Abstract: This article reviews the molecular mechanisms of resistance to fluoroquinolones, erythromycin, chloramphenicol, tetracycline, and trimethoprim-sulfamethoxazole in Streptococcus pneumoniae. Resistance to fluoroquinolones primarily involves mutations in the DNA gyrase gene, gyrA, and in the topoisomerase IV genes, parC and parE, although in vitro studies have indicated that some strains may use an efflux mechanism for resistance to certain fluoroquinolones. Ciprofloxacin resistance results from initial and necessary mutations in ParC leading to low-level resistance and subsequent mutations in GyrA leading to high-level resistance. Sparfloxacin resistance results from initial mutations in GyrA, with ParC mutations occurring subsequently. A single amino acid substitution in ParE has also been associated with low-level resistance in S pneumoniae. Two mechanisms have been described for resistance to erythromycin. Coresistance to macrolides, lincosamides, and streptogramin B type antibiotics is a result of modification of the ribosome through methylation of an adenine residue in domain V of the 23S rRNA. This methylation is encoded by the methylase gene, ermAM. Resistance only to 14-and 15-membered macrolides is a result of efflux of the antibiotic from the cell, encoded by the gene, mefE, in S pneumoniae, and appears to be rapidly emerging as the predominant mechanism of resistance to erythromycin in many countries. The production of chloramphenicol acetyltransferase, an enzyme capable of catalyzing the conversion of chloramphenicol to its nonfunctional 1-acetoxy, 3-acetoxy, and 1,3-diacetoxy derivatives, leads to chloramphenicol resistance in S pneumoniae. Chloramphenicol acetyltransferase is encoded by a cat gene identical to the cat gene from the Staphylococcus aureus plasmid, pC194. Tetracycline resistance occurs through ribosomal protection encoded by the genes tet(M) and tet(O). It is possible that the Tet(M) and Tet(O) proteins cause tetracycline to be released from the ribosome, although the precise mechanism remains unclear. Resistance to trimethoprim is mediated through a single amino acid substitution in the chromosomal dihydrofolate reductase gene of S pneumoniae, which is thought to disrupt the bond with trimethoprim without affecting the action of the dihydrofolate reductase. Sulphonamide resistance appears to result from repetitions of one or two amino acids in the chromosomal dihydropteroate synthase. Although resistance exists to nearly all antimicrobial agents used in the treatment of S pneumoniae infections, ongoing research into new or alternative therapies is encouraging.

Wiedow O. et al. *Antileukoprotease in human skin: an antibiotic peptide constitutively produced by keratinocytes.* Biochem Biophys Res Commun. 1998; 248(3) : 904-9.p Abstract: Antileukoprotease (ALP), also known as mucous protease inhibitor or secretory leukoprotease inhibitor, resembles one of the major antiproteases present in human body fluids. It is capable of preventing proteolytic degradation of extracellular matrix proteins by neutrophil-derived serine proteases. ALP was isolated from human callus and detected in supernatants of cultured human primary keratinocytes. ALP mRNA was constitutively expressed in keratinocytes and the expression was not significantly affected by TNF alpha or Interferon gamma stimulation. In microbicidal assays recombinant ALP exhibited antimicrobial activity against several human skin associated microorganisms like P. aeruginosa, S. aureus, S. epidermidis, and C. albicans, indicating that ALP may actively participate in mechanisms allowing homeostasis of bacterial and yeast colonization on human skin. Thus, ALP represents a major soluble serine protease inhibitor and antimicrobial agent expressed in human skin and seems to contribute to the high resistance of the epidermis against proteolysis and infections.

Wiernikowski J.T. et al. *Stability and sterility of recombinant tissue plasminogen activator at -30 degrees C.* Lancet. 2000; 355(9222) : 2221-2.p Abstract: We assessed whether frozen recombinant tissue plasminogen activator (rt-PA) remains stable and sterile for up to 22 weeks at -30 degrees C. Our findings confirm that rt-PA is a cost-effective alternative to urokinase for restoring patency to occluded central venous catheters.

Wiesenfeld H.C. et al. *The use of once-daily dosing of gentamicin in obstetrics and gynecology.* Infect Dis Obstet Gynecol. 1998; 6(4) : 155-9.p Abstract: Gentamicin is a widely-used antimicrobial agent for obstetric and gynecologic infections. Renewed excitement in this antibiotic has arisen from recent information supporting less frequent dosing. In this symposium, we will describe the pharmacokinetics of gentamicin and review new information advocating the use of once-daily administration of gentamicin.

Wiffen S.J. et al. *The value of routine donor corneal rim cultures in penetrating keratoplasty.* Arch Ophthalmol. 1997; 115(6) : 719-24.p Abstract: OBJECTIVE: To investigate the value of donor corneal rim cultures performed routinely at the time of penetrating keratoplasty. DESIGN: Retrospective review of Mayo Clinic medical records for all corneal transplantations for which donor rim cultures have been performed. MAIN OUTCOME MEASURES: Frequency of positive cultures, occurrence of endophthalmitis within 2 months of undergoing surgery, action taken in response to the culture results, and costs of cultures. RESULTS: Donor rim culture results were available for 1078 of 1083 consecutive transplantations performed from 1981 to 1995. Three cases of endophthalmitis (0.28%) and 1 suture abscess occurred. Rim cultures were negative in all of these cases. Action was documented in response to positive cultures in 17 cases (8.1%). The estimated average cost of routine rim cultures in 1994 was $137 per donor cornea. Bacterial or fungal cultures were positive in 209 (19.4%) cases. Two microorganisms were cultured simultaneously in 17 cases (1.6%) and 3 in 2 cases (0.2%). Staphylococcus coagulase-negative (130 cases [12.1%]), and

Streptococcus species, viridans group (23 cases [2.1%]), were the most common isolates. Fifty-two (62.7%) of 83 coagulase-negative Staphylococcus species isolates tested were resistant to gentamicin. There were more positive cultures from corneas stored in Optisol (37/183 [20%]) than in Optisol GS (16/144 [11%]) (P =.03). Fewer cultures were positive from live donors (9/93 [10%]) compared with cadaveric donors (181/ 909 [20%]) (P =.02). Positive cultures were more frequent for corneas excised in situ (39/125 [31.2%]) than for those enucleated (152/851 [17.9%]) (P <.001). CONCLUSIONS: Despite differences in rates of positive donor rim cultures with different harvesting and storage techniques, for our practice, routine donor corneal rim cultures had no predictive value for infective complications of penetrating keratoplasty and, therefore, added an unnecessary expense to the management of our patients.

Wight N. et al. *Clostridium difficile-associated diarrhoea*. Postgrad Med J. 1998; 74(877) : 677-8.p Abstract: At our hospital, the number of cases of Clostridium difficile-associated diarrhoea increased from 29 in 1993 to 210 in 1995. The case notes of 110 patients with C difficile-associated diarrhoea during the first 6 months of 1995 were analysed retrospectively. The majority of the patients (106) had received antibiotics before the onset of diarrhoea; 46 had received three or more different antibiotics and 28 had received metronidazole. In 19 patients, the first stool sample after the onset of diarrhoea was negative for C difficile cytotoxin, with a mean delay of 8.2 days before a positive stool sample. We conclude that C difficile-associated diarrhoea was associated with the usage of multiple antibiotics, and that metronidazole did not protect against colonisation by C difficile. We also recommend that more than one stool sample should be tested for the C difficile cytotoxin.

Wilcke B.W. Jr. *The state of public health laboratories.* Mil Med. 2000; 165(7 Suppl 2) : 8-11.p Abstract: Public health laboratories in the United States exist at the federal, state, and local level. The earliest laboratories were created in the late 1800s in the wake of the work of Robert Koch and Louis Pasteur. Currently, these laboratories make up a loosely formed network. The combined state portion of this network employs more than 6,000 staff members, tests more than 20 million specimens each year, and has a combined annual budget of more than $300 million. Public health laboratories are found in a variety of organizational settings. Several efforts have been made to define the roles of public health laboratories. Recently, the Association of Public Health Laboratories adopted a consensus position that has formally set forth the core functions, which include activities such as environmental testing, emergency response, surveillance, and reference services. Public health laboratories are being challenged with funding, new technology, and current issues such as bioterrorism, food safety, and antimicrobial resistance.

Wildberger J.E. et al. *[Percutaneous transjugular thrombectomy in iliocaval thrombosis— initial experience with a newly developed 12F balloon sheath].* Rofo Fortschr Geb Rontgenstr Neuen Bildgeb Verfahr. 2000; 172(7) : 651-5.p Abstract: PURPOSE: To evaluate the feasibility of percutaneous thrombectomy for the removal of floating iliocaval thrombi using a balloon sheath. MATERIALS AND METHODS: A newly developed balloon sheath (inner diameter: 12-F; outer diameter: 18-F) was tested in two patients with extensive iliocaval thrombosis. Mechanical thrombectomy was performed due to recurrent pulmonary embolism under therapeutic anticoagulation in antiphospholipid-antibody syndrome and, respectively, paraneoplastic thrombosis without a decrease of fresh thrombus mass in spite of pharmacological treatment. Via a transjugular access (20-F), the sheath was advanced retrogradely into the inferior vena cava. After blocking of the vessel, mechanical fragmentation was performed through the working channel coaxially, using a temporary vena cava filter as a rotating basket (max. diameter: 30 mm). Residual thrombus fragments were removed by aspiration. RESULTS: The thrombectomy balloon sheath tested allowed a complete removal of fresh thrombi after fragmentation. In addition, older clot material was obtained. Balloon occlusion prevented the central embolization of thrombus fragments. Clinical signs indicating pulmonary embolism were not seen. The fluid loss due to aspiration was negligible. CONCLUSIONS: The newly developed 12-F balloon sheath proved to be efficient for the extraction of large thrombi. Balloon occlusion safely prevented central embolization of thrombus fragments proximal to the sheath.

Wilhelm K.E. et al. *Nonsurgical fluoroscopically guided dacryocystoplasty of common canalicular obstructions.* Cardiovasc Intervent Radiol. 2000; 23(1) : 1-8.p Abstract: PURPOSE: To assess dacryocystoplasty in the treatment of epiphora due to obstructions of the common canaliculus. METHODS: Twenty patients with severe epiphora due to partial (n = 16) or complete (n = 4) obstruction of the common canaliculus underwent fluoroscopically guided dacryocystoplasty. In all cases of incomplete obstruction balloon dilation was performed. Stent implantation was attempted in cases with complete obstruction. Dacryocystography and clinical follow-up was performed at intervals of 1 week, and 3, 6, 12, and 18 months after the procedure. The mean follow-up was 6 months (range 3-18 months). RESULTS: Balloon dilation was technically successfully performed in all patients with incomplete obstructions (n = 16). In three of four patients with complete obstruction stent implantation was performed successfully. Subsequent to failure of stent implantation in one of these patients balloon dilation was performed instead. The long-term primary patency rate in patients with incomplete obstructions was 88% (n = 14/16). In three of four cases with complete obstruction long-term patency was achieved during follow-up. Severe complications, infections, or punctal splitting were not observed. CONCLUSION: Fluoroscopically guided balloon dacryocystoplasty is a feasible nonsurgical therapy in canalicular obstructions with good clinical results that may be used as an alternative to surgical procedures. In patients with complete obstructions stent placement is possible but further investigations are needed to assess the procedural and long-term results.

Wilke W.W. et al. *Vancomycin-resistant Enterococcus raffinosus: molecular epidemiology, species identification error, and frequency of occurrence in a national resistance surveillance program*. Diagn Microbiol Infect Dis. 1997; 29(1) : 43-9.p Abstract: Enterococcal blood stream infections are the third most common among all nosocomial blood stream infections in the United States and the occurrence of glycopeptide (vancomycin, teicoplanin) resistance in these isolates has markedly increased. Control of hospital-acquired infections with vancomycin-resistant enterococci requires high quality antimicrobial susceptibility test methods and species identification procedures as a supplement to epidemiologic investigation and appropriate infection control procedures. In this report, bacteremias caused by Enterococcus avium (BioMerieux Vitek, Hazelwood, MO, USA) were observed to be Enterococcus raffinosus infections (six of eight cases; 1.1% of all cases) when reference biochemical identification methods were applied. The vancomycin-susceptible E. raffinosis (two strains) and E. avium (two strains) had unique phenotypic and genotypic molecular profiles. In contrast, four vancomycin-resistant E. raffinosus strains (van A by polymerase chain reaction) from a single institution had the same phenotypic and molecular (PCR, PFGE, ribotyping) pattern, indicating clonal dissemination among four patients over a 66-day period. Clinical laboratories should be aware of the high probability that van A genes may be transferred from Enterococcus faecium or Enterococcus faecalis to other more rarely encountered Enterococcus species. Also contemporary, widely used commercial identification systems may fail to accurately identify those rare species. Errors appear to be most prevalent for E. avium, Enterococcus durans, and E. raffinosus based on the experience of the SCOPE Program.

Willeke K. et al. *Penetration of airborne microorganisms through a surgical mask and a dust/mist respirator.* Am Ind Hyg Assoc J. 1996; 57(4) : 348-55.p Abstract: This study investigated bacterial penetration of dif-

ferent bacterial shapes, aerodynamic sizes, and flow rates through a surgical mask and a dust/mist respirator. The bacterial penetrations were compared with those of spherical corn oil particles of the same aerodynamic diameter tested under the same conditions. The tests were performed at different levels of aerosol penetration. Bacteria, ranging from spherical to rod-shaped with a high aspect (length to width) ratio, were selected as test agents. Among these, Pseudomonas fluorescens physically simulates Mycobacterium tuberculosis by shape and size. The concentrations of bacteria upstream and downstream of the test devices were measured with an aerodynamic size spectrometer. This instrument was found to measure the total viable and nonviable bacterial concentration effectively and dynamically over the entire bacterial size range down to 0.5 microns in aerodynamic size. The results indicate that the spherical corn oil particles and the spherical Streptococcus salivarius bacteria have the same penetration in the size range from 0.9 to 1.7 microns. It has been found that rod-shaped bacteria penetrate less. The penetration difference between the spherical and rod-shaped bacteria depends on the aspect ratio of the bacteria. For an aspect ratio of 4, the penetration of rod-shaped bacteria is about half that of spherical ones. Thus, it is projected that a respirator with 90% efficiency against spherical microorganisms or test particles (10% penetration) will be 95% efficient against rod-shaped microorganisms of the same aerodynamic equivalent diameter with an aspect ratio of 3 to 4, such as Mycobacterium tuberculosis (5% penetration).

Williams D.N. *Antimicrobial resistance. Guidelines for the primary care physician*. Minn Med. 1998; 81(5) : 25-9.p Abstract: Antimicrobial resistance is an important issue when treating patients with various bacterial, fungal, protozoal, and viral infections. Until recently, the focus of concern was on nosocomially acquired infections. However, organisms causing common community-acquired infections have now developed antimicrobial resistance. This paper provides a brief overview of this emerging global threat and discusses resistance in gram-positive organisms, outpatient and antibiotic use, and strategies to reduce antibiotic overuse. Curbing the overuse of antibiotics is crucial to reversing the increase in drug-resistant bacteria. We need to develop guidelines and educate physicians and the public on the use of antibiotics for respiratory syndromes with predominantly viral etiologies.

Williford P.M. *Opportunities for mupirocin calcium cream in the emergency department*. J Emerg Med. 1999; 17(1) : 213-20.p Abstract: Mupirocin calcium cream is a newly reformulated topical antibiotic with a bactericidal spectrum specific for the pathogens that frequently cause secondary infections in superficial wounds. Both the calcium cream and ointment formulations have demonstrated efficacy in the treatment of secondarily infected traumatic lesions and dermatoses, including eczema, burns, wounds, bites, and ulcers. Mupirocin has a low risk of systemic and topical complications. To date, antimicrobial resistance is rare among target pathogens. The use of mupirocin to treat secondary wound infection has a profile of high efficacy and does not impair the normal healing in traumatized skin.

Willis C. et al. *Detection of antibacterial agents in warm water prawns.* Commun Dis Public Health. 1999; 2(3) : 210-4.p Abstract: Samples of cooked and raw prawns intended for human consumption were collected by officers at Southampton Port Health Authority, and tested for the presence of antimicrobial agents. Antimicrobial activity was detected in 23 out of 98 cooked prawn samples but in none of the 20 raw samples collected. Samples that showed antimicrobial activity were analysed using high performance liquid chromatography and immunoassay, resulting in the presumptive identification of trimethoprim in 15 samples, and low levels of gentamicin in three samples. Prawns in which trimethoprim was putatively detected contained bacteria with significantly greater resistance to this antibiotic than samples in which no trimethoprim was found. This suggests that the presence of antibiotics in prawn samples may be correlated with increased resistance to these drugs in the associated microflora. There are currently no guidelines regarding acceptable levels of antibiotics in seafood products. These results indicate that the use of these drugs by prawn farmers may be widespread, and may be an issue that requires further attention in the future.

Wilson A.P. *Emerging antimicrobial resistance in the surgical compromised host*. J Chemother. 1999; 11(6) : 518-23.p Abstract: Improvements in the treatment of compromised patients have resulted in their prolonged survival in a debilitated state. Patients have repeated courses of antibiotics and become colonised with multiresistant pathogens during a stay in the intensive care unit. Surgical wound infections can then be very difficult to treat. Methicillin-resistant Staphylococcus aureus is now common although wide variations in prevalence exist between countries and regions. Klebsiella spp with multiple resistance is a common cause of septicemia and can be associated with cephalosporin use. Acinetobacter spp and vancomycin-resistant enterococci can cause infections resistant to all readily available antibiotics. The prevalence of infection with each of these pathogens is increasing. Control measures should include hand washing, universal precautions for infection control, source isolation, restrictive antibiotic policy and antibiotic rotation. Although new agents currently in trials may be effective in the long term, the future for antibiotic treatment or prophylaxis of surgical infections is in doubt.

Wilson M.L. et al. *Controlled clinical comparison of bioMerieux VITAL and BACTEC NR-660 blood culture systems for detection of bacteremia and fungemia in adults.* J Clin Microbiol. 1999; 37(6) : 1709-13.p Abstract: A total of 9,446 blood cultures were collected from adult patients at three university-affiliated hospitals. Of these, 8,943 cultures were received with both aerobic bottles filled adequately; 885 yielded 1,016 microorganisms, including 622 isolates (61%) that were the cause of sepsis, 337 isolates (33%) that were contaminants, and 57 isolates (6%) that were indeterminate as the cause of sepsis. With the exception of Staphylococcus aureus, which was recovered more often from VITAL aerobic bottles, more pathogenic microorganisms were recovered from BACTEC NR6 (aerobic) bottles than from VITAL aerobic bottles. Growth of pathogenic microorganisms was detected earlier in VITAL aerobic bottles. A total of 8,647 blood cultures were received with both anaerobic bottles filled adequately; 655 yielded 740 microorganisms, including 486 isolates (66%) that were the cause of sepsis, 215 isolates (29%) that were contaminants, and 39 isolates (6%) that were indeterminate as the cause of sepsis. More pathogenic microorganisms were recovered from VITAL anaerobic bottles than from BACTEC NR7 (anaerobic) bottles. Growth of pathogenic microorganisms was detected earlier in VITAL anaerobic bottles. In 8,500 sets all four bottles were received adequately filled. When paired aerobic and anaerobic bottle sets (systems) were compared, more pathogenic microorganisms (again with the exception of S. aureus) were recovered from the BACTEC system. For the 304 septic episodes (253 unimicrobial and 51 polymicrobial), significantly more were detected by the BACTEC system. We conclude that VITAL requires modification to improve recovery of pathogenic microorganisms to make it competitive with other commercially available blood culture systems.

Wilson M.L. et al. *Controlled evaluation of BacT/alert standard anaerobic and FAN anaerobic blood culture bottles for the detection of bacteremia and fungemia.* J Clin Microbiol. 1995; 33(9) : 2265-70.p Abstract: FAN medium was formulated to improve microbial recovery, particularly for fastidious microorganisms and for microorganisms causing sepsis in patients receiving antimicrobial therapy. In a controlled clinical evaluation performed at four university-affiliated hospitals, FAN anaerobic bottles were compared with standard anaerobic bottles for yield, speed of detection of microbial growth, and detection of septic episodes. A total of 10,431 blood culture sets were received; both anaerobic bottles of 7,694 blood culture sets were adequately filled

with blood. Altogether, 925 isolates were recovered: 557 that were the cause of sepsis, 99 that were indeterminate as the cause of sepsis, and 269 contaminants. More Staphylococcus aureus ($P < 0.001$), coagulase-negative staphylococci ($P < 0.001$), Escherichia coli ($P < 0.02$), and all microorganisms combined ($P < 0.005$) were recovered from FAN bottles; more nonfermentative gram-negative bacilli ($P < 0.05$), Torulopsis glabrata ($P < 0.001$), and other yeasts ($P < 0.01$) were recovered from standard bottles. Growth of S. aureus ($P < 0.001$), coagulase-negative staphylococci ($P < 0.001$), Enterococcus faecalis ($P < 0.025$), streptococci other than Streptococcus pneumoniae ($P < 0.01$), and all microorganisms combined ($P < 0.001$) was detected earlier in standard bottles; growth of more isolates of E. coli ($P < 0.05$) and anaerobic bacteria ($P < 0.01$) was detected earlier in FAN bottles. The mean times to detection were 14.2 and 16.1 h for standard and FAN bottles, respectively.(ABSTRACT TRUNCATED AT 250 WORDS).

Wilson M.P. et al. *Laboratory role in the management of hospital acquired infections.* J Hosp Infect. 1999; 42(1) : 1-6.p Abstract: The microbiology laboratory has many important roles. It must collaborate with the infection control team on the investigations of outbreaks. During outbreaks, it must save relevant samples, look for reservoirs and undertake typing techniques, all of which should be timely. New technology should be available to detect, identify and characterize micro-organisms. Molecular biological techniques have enhanced the speed and sensitivity of detection methods and have allowed the laboratory to identify organisms that do not grow or grow slowly in culture. Molecular techniques also enable the microbiologist to identify antibiotic resistance genes and to 'fingerprint' hospital organisms, thereby facilitating studies of nosocomial transmission.

Wilson W.R. et al. *The use of cefotaxime for the treatment of common infections: in vitro, pharmacokinetic and clinical considerations.* J Chemother. 1997; 9 Suppl 2 : 5-18.p Abstract: The use of the broad-spectrum cephalosporin, cefotaxime, in internal medicine is well-established, particularly in the treatment of moderately severe to severe community- and hospital-acquired infections. It is particularly useful for infections of the lower respiratory tract, urinary and biliary systems, skin and soft tissue, and in serious conditions, such as meningitis, particularly in pediatric patients. Knowledge of the pharmacokinetic and pharmacodynamic properties of cefotaxime supports the view that low dose (1-2 g), low frequency (12-hourly) dosage regimens are applicable to many mild-to-moderately severe infections, including community-acquired pneumonia, caused by susceptible organisms.

Wilson W.R. et al. *Antibiotic treatment of adults with infective endocarditis due to streptococci, enterococci, staphylococci, and HACEK microorganisms. American Heart Association.* JAMA. 1995; 274(21) : 1706-13.p Abstract: OBJECTIVE—To provide guidelines for the treatment of endocarditis in adults caused by the following microorganisms: viridans streptococci and other streptococci, enterococci, staphylococci, and fastidious gram-negative bacilli of the HACEK group. PARTICIPANTS—An ad hoc writing group appointed by the American Heart Association under the auspices of the Committee on Rheumatic Fever, Endocarditis, and Kawasaki Disease, Council on Cardiovascular Disease in the Young. EVIDENCE—Published studies of the treatment of patients with endocarditis and the collective clinical experience of this group of experts. CONSENSUS PROCESS—The recommendations were formulated during meetings of the working group and were prepared by a writing committee after the group had agreed on the specific therapeutic regimens. The consensus statement was subsequently reviewed by standing committees of the American Heart Association and by a group of experts not affiliated with the working group. CONCLUSIONS—Sufficient evidence has been published that recommendations regarding treatment of the most common microbiological causes of endocarditis (viridans streptococci, enterococci, Streptococcus bovis, staphylococci, and the HACEK organisms) are justified. There are insufficient published data to make a strong statement regarding the efficacy of specific therapeutic regimens for cases of endocarditis due to microorganisms that uncommonly cause endocarditis. As a useful aid to the practicing clinician, the writing group developed a consensus opinion regarding management of endocarditis caused by the most commonly encountered microorganisms and regarding those cases due to infrequent causes of endocarditis.

Wimer S.M. et al. *Levofloxacin: a therapeutic review.* Clin Ther. 1998; 20(6) : 1049-70.p Abstract: This therapeutic review discusses the pharmacology, pharmacokinetics, in vitro activity, drug interactions, and adverse effects of levofloxacin, a fluoroquinolone antibiotic. Particular emphasis is placed on the clinical efficacy of levofloxacin and its place in therapy. Compared with ciprofloxacin and the earlier quinolone agents, levofloxacin has an improved pharmacokinetic profile that allows convenient once-daily dosing in either an oral or parenteral formulation. Levofloxacin has enhanced activity against gram-positive aerobic organisms, including penicillin-resistant pneumococci. In published comparative trials involving commonly used treatment regimens, levofloxacin had equivalent if not greater activity in the treatment of community-acquired pneumonia, acute bacterial exacerbations of chronic bronchitis, acute bacterial sinusitis, acute pyelonephritis, and complicated urinary tract infection. Levofloxacin is well tolerated and induces minimal adverse drug reactions. Based on the above attributes, it may be reasonable to include levofloxacin on the hospital formulary in place of older quinolones. More recently released quinolones such as trovafloxacin exhibit similar advantages; however, until direct comparative trials between levofloxacin and these newer agents are conducted, it is difficult to advocate one agent over another. Regardless of which quinolone is the primary agent on the formulary, it is imperative that this class of antimicrobial drugs be used with discretion to minimize the development of resistance.

Wirth R. *Sex pheromones and gene transfer in Enterococcus faecalis.* Res Microbiol. 2000; 151(6) : 493-6.p Abstract: Cell-density-dependent regulatory controls have been recognized in recent years to play major roles with regard to many microorganisms. In gram-negative bacteria very often N-acyl-homoserine lactones act as 'quorum-sensing' regulators, whilst gram-positive bacteria mainly use peptides to monitor their cell density. The so-called sex pheromone system of Enterococcus faecalis is just one example of the latter type of regulation. The system is a complex one; in this communication, I will discuss in particular the potential role of the peptides to also act as virulence factors.

Wise R. *Clinical efficacy and antimicrobial pharmacodynamics.* Hosp Med. 2000; 61(1) : 24-30.p Abstract: Changes in the susceptibility of bacterial pathogens and the availability of new antimicrobial drugs mean that physicians need to understand the underlying pharmacodynamics of each antimicrobial therapy. Antimicrobial pharmacodynamics determine clinical efficacy and should therefore be carefully considered when selecting appropriate antibiotic agents in the therapeutic setting.

Wise R. *A review of the mechanisms of action and resistance of antimicrobial agents.* Can Respir J. 1999; 6 Suppl A : 20A-2A.p Abstract: Over the past 60 years, the introduction of new antibiotics has been matched by the development of new mechanisms of resistance by the bacteria. Current antibiotics act at a variety of sites within the target bacteria, including the cross-linking enzymes in the cell wall (beta-lactams), various ribosomal enzymes (macrolides, tetracyclines and aminoglycosides), nucleic acid polymerases (quinolones and rifampin) and folate synthesis (sulphas and trimethoprim). Four major mechanisms of resistance have been shown. Target site alterations, such as changes to the penicillin-binding protein, are common. Inactivation of antimicrobials, as by penicillinases or the new carbapenemases, is often seen. Some bacteria such as Pseudomonas aeruginosa can produce alterations in cell wall permeability that

deny access to antimicrobials during the course of therapy. Finally, newly described efflux mechanisms pump the antimicrobial out of the cell before it can reach its target site.

Wise R. et al. *Pharmacokinetics and pharmacodynamics of fluoroquinolones in the respiratory tract*. Eur Respir J. 1999; 14(1) : 221-9.p Abstract: Pharmacokinetic and pharmacodynamic features are important predictors of the therapeutic efficacy of an antibiotic. In respiratory tract infection, study of the clinical implication of pharmacodynamic features is complicated as infection occurs at several distinct sites. To ensure microbiological efficacy, antibiotics should not only be active against common respiratory pathogens but should also penetrate to the sites of infection. The newer fluoroquinolones combine good activity against Gram-negative and "atypical" organisms with extended Gram-positive activity, and are unaffected by penicillin susceptibility status and beta-lactamase production. Long terminal half-lives allow once-or twice-daily dosing, and a concentration in lung tissue at levels many times higher than is observed in the serum. Although the benefit of antibiotics in some lower respiratory tract infections has been questioned, they have proved effective in community-acquired pneumonia and acute exacerbations of chronic obstructive pulmonary disease. Early studies of oral fluoroquinolones versus intravenous or oral treatment with one or more agents in community-acquired pneumonia have shown promise. Although resistance is a potential problem with increased fluoroquinolone use, its rapid development is not anticipated. In conclusion, the broad-spectrum antimicrobial activity, tissue distribution and safety profile of fluoroquinolones suggest that they have a place in respiratory tract infection.

Wisplinghoff H. et al. *Molecular relationships and antimicrobial susceptibilities of viridans group streptococci isolated from blood of neutropenic cancer patients.* J Clin Microbiol. 1999; 37(6) : 1876-80.p Abstract: From January 1995 to May 1998, 57 episodes of bacteremia due to viridans group streptococci were identified in 50 febrile neutropenic patients with hematologic malignancies. Four patients experienced two separate episodes of streptococcal bacteremia, and one patient had four separate episodes of streptococcal bacteremia. Strains were identified to species level as Streptococcus mitis (n = 37), Streptococcus oralis (n = 19), and Streptococcus salivarius (n = 1). Epidemiologic relatedness of these strains was studied by using PCR-based fingerprinting with M13 and ERIC-2 primers and pulsed-field gel electrophoresis with restriction enzyme SmaI. All strains that were isolated from different patients exhibited unique fingerprint patterns, thus suggesting that viridans group streptococcal bacteremia usually derives from an endogenous source. Cross-transmission of strains between patients could not be established. Four S. mitis isolates recovered during four separate bacteremic episodes in a single patient had identical fingerprint patterns. Susceptibility testing was carried out by broth microdilution technique according to National Committee for Clinical Laboratory Standards guidelines. The MICs at which 90% of the isolates are inhibited were (in milligrams per liter) as follows: 0. 5 (penicillin), 0.5 (amoxicillin), 0.25 (cefotaxime), 2 (chloramphenicol), 4 (erythromycin), 0.5 (clindamycin), >/=32 (tetracycline), >/=32 (trimethoprim-sulfamethoxazole), 4 (ciprofloxacin), 0.5 (sparfloxacin), 0.5 (vancomycin), 0.25 (teicoplanin), and 1 (quinupristin-dalfopristin). High-level penicillin resistance (MIC, >/=4 mg/liter) was found in one isolate only, but intermediate penicillin resistance was noted in 11 isolates (19%). Resistance rates to other drugs were as follows: 7% (amoxicillin), 4% (cefotaxime), 4% (chloramphenicol), 32% (erythromycin), 9% (clindamycin), 39% (tetracycline), 68% (trimethoprim-sulfamethoxazole), 23% (ciprofloxacin), 0% (sparfloxacin), 0% (vancomycin), 0% (teicoplanin), and 0% (quinupristin-dalfopristin).

Witz M. et al. *Acute brachial artery thrombosis as the initial manifestation of human immunodeficiency virus infection*. Am J Hematol. 2000; 64(2) : 137-9.p Abstract: Thrombosis of upper extremity arteries is most commonly due to atherosclerosis of the proximal subclavian artery, trauma, or catheter-related injury. In the absence of an identifiable cause, a search for a hypercoagulable state is indicated. Hematologic manifestations of human immunodeficiency virus (HIV) infection and AIDS are frequent occurrences (Coyle TE. Med Clin N Am 1997;81:449-476). The most important of these are cytopenias (anemia, neutropenia, and thrombocytopenia). The incidence and severity of cytopenia are generally correlated to the stage of the HIV infection. In addition, various coagulation abnormalities have been reported in HIV-infected patients. Apart from thrombocytopenia, these have included a prolonged APTT due to the presence of lupus anticoagulant, an increased prevalence of protein S and heparin cofactor II deficiency, and hypoalbuminemia-related fibrin polymerization defects (Toulon P. Ann Bio Clin (Paris) 1998;56:153-160). HIV infection has also been associated with endothelial dysfunction. Although for the most part asymptomatic, elevated D-dimer levels have been found in HIV-infected patients, suggesting the existence of a prethrombotic state. In fact, clinical thrombosis eventuates in 2% of these patients (Toulon, 1988). Documented thromboses have involved both veins and arteries. We hereby present a patient who developed an acute thrombosis of his brachial artery as the initial manifestation of HIV infection. Copyright 2000 Wiley-Liss, Inc.

Wizemann T.M. et al. *Peptide methionine sulfoxide reductase contributes to the maintenance of adhesins in three major pathogens.* Proc Natl Acad Sci U S A. 1996; 93(15) : 7985-90.p Abstract: Pathogenic bacteria rely on adhesins to bind to host tissues. Therefore, the maintenance of the functional properties of these extracellular macromolecules is essential for the pathogenicity of these microorganisms. We report that peptide methionine sulfoxide reductase (MsrA), a repair enzyme, contributes to the maintenance of adhesins in Streptococcus pneumoniae, Neisseria gonorrhoeae, and Escherichia coli. A screen of a library of pneumococcal mutants for loss of adherence uncovered a MsrA mutant with 75% reduced binding to GalNAcbeta1-4Gal containing eukaryotic cell receptors that are present on type II lung cells and vascular endothelial cells. Subsequently, it was shown that an E. coli msrA mutant displayed decreased type I fimbriae-mediated, mannose-dependent, agglutination of erythrocytes. Previous work [Taha, M. K., So, M., Seifert, H. S., Billyard, E. & Marchal, C. (1988) EMBO J. 7, 4367-4378] has shown that mutants with defects in the pilA-pilB locus from N. gonorrhoeae were altered in their production of type IV pili. We show that pneumococcal MsrA and gonococcal PilB expressed in E. coli have MsrA activity. Together these data suggest that MsrA is required for the proper expression or maintenance of functional adhesins on the surfaces of these three major pathogenic bacteria.

Wolday D. et al. *Antimicrobial sensitivity pattern of Salmonella: comparison of isolates from HIV-infected and HIV-uninfected patients.* Trop Doct. 1998; 28(3) : 139-41.p Abstract: A retrospective analysis of all cases of Salmonella infections occurring between 1991 and 1995 was undertaken in order to evaluate the antimicrobial sensitivity pattern of the isolates from both human immunodeficiency virus (HIV) infected and uninfected Ethiopian patients. During the 5-year study period, we identified 147 cases of Salmonella infections. Only in 49 cases was the HIV serostatus known; 22 (44.9%) of the infections were in HIV seronegative patients while 27 (55.9%) were in HIV seropositive patients. The strains were isolated from blood (71.4%), urine (18.4%) and stool (8.2%). Salmonella infection was found to be more frequent (55.15% versus 44.9%) among HIV positive than HIV-negative patients. Moreover, Salmonella isolates recovered from HIV-seropositive patients were significantly resistant to many of the antibiotics tested when compared to the isolates from HIV-seronegative patients. The only chloramphenicol resistant Salmonella typhi occurred in a patient who was seropositive for HIV. According to these results, Ethiopian patients infected with HIV may be at risk of acquiring infections, especially non-typhoidal salmonellas, that are multi-drug resistant (MDR) strains than HIV-uninfected subjects. The emergence of MDR Salmonella infection among HIV-positive patients requires reassessment of chemotherapeutic approaches in

this patient population, and warrants continued laboratory surveillance.

Wolday D. et al. *Increased incidence of resistance to antimicrobials by urinary pathogens isolated at Tikur Anbessa Hospital*. Ethiop Med J. 1997; 35(2) : 127-35.p Abstract: A retrospective analysis of 2209 urine samples submitted for culture to the Microbiology Laboratory of the Tikur Anbessa Hospital (TAH), Addis Ababa, between January 1992 and December 1994 was made. Significant bacteriuria (colony count > 10(5) colony forming units/ml urine) was detected in 672 (30%). Pure culture was obtained in 510 (23%) of all samples and polymicrobial growth was detected in the remaining 162 (7%). Gram-negative bacteria comprised 95% of all isolates. The commonest organisms being Escherichia coli (39%) and Klebsiella species (26%). Among the gram-positives, Staphylococcus aureus (57%) was the most common pathogen isolated. Most of the organisms were resistant to multiple drugs. Ampicillin, carbenicillin, chloramphenicol, tetracycline and trimethoprim-sulphamethoxazole were effective in less than 30% of all cases. There was also a significant resistance to cephalothin, gentamicin and kanamycin. Only nalidixic acid and nitrofurantoin were effective for most of the organisms. Compared to previous studies, there is an indication of reduced effectiveness of the commonly prescribed antibiotics. The rational use of drugs should be practiced in order to prevent the emergence of multi-drug resistant microorganisms.

Wolff M. *Comparison of strategies using cefpirome and ceftazidime for empiric treatment of pneumonia in intensive care patients. The Cefpirome Pneumonia Study Group.* Antimicrob Agents Chemother. 1998; 42(1) : 28-36.p Abstract: In an international, multicenter, open-label, randomized comparative study, adult patients in intensive care units were enrolled to receive cefpirome intravenously at 2 g twice daily or ceftazidime intravenously at 2 g three times daily for the empiric treatment of pneumonia. Randomization was performed after a double stratification according to the investigator's initial choice of monotherapy or combination therapy and then on the basis of the severity of disease. The primary endpoint was the clinical response at the end of treatment in the intent-to-treat population. Data for all patients were reviewed by a blinded observer. Of the 400 enrolled patients, 201 received cefpirome (monotherapy, 56%) and 199 received ceftazidime (monotherapy, 51%). Pneumonia was hospital acquired for 75% of the patients. Clinical failures rates were 34 versus 36% (odds ratio = 0.922; upper bound of 90% confidence interval = 1.301) in the intent-to-treat analysis for cefpirome and ceftazidime, respectively. For the cefpirome and ceftazidime groups, there were 35 versus 30% clinical failures among monotherapy-stratified patients, respectively, and 34 versus 42% clinical failures among combination therapy-stratified patients, respectively. The rates of clinical failures in the per-protocol analysis were 38 and 42%, respectively. In the population of patients evaluable for bacteriologic efficacy, eradication or presumed eradication was obtained for 71% (172 of 241) and 70% (162 of 230) of the pathogens isolated from the patients receiving cefpirome and ceftazidime, respectively. The mortality rates within 2 weeks after the end of treatment were similar (cefpirome group, 31%; ceftazidime group, 26%), as were the percentages of patients with at least one treatment-related adverse event (17 and 19%, respectively). An empiric treatment strategy with cefpirome at 2 g twice daily is equivalent in terms of efficacy and tolerance to ceftazidime at 2 g three times daily for the treatment of pneumonia in patients in intensive care units.

Wolfs T.F. et al. *[High percentage of antibiotic resistance in Shigella infections in children in Curacao]*. Ned Tijdschr Geneeskd. 1996; 140(50) : 2510-3.p Abstract: OBJECTIVE: To evaluate antimicrobial treatment and resistance in clinical childhood shigellosis. DESIGN: Retrospective. SETTING: St. Elisabeth Hospital, Willemstad, Curacao, Dutch Antilles. METHOD: From September 1991 through August 1995 shigellosis was diagnosed in 93 children out of 456 hospitalised with gastroenteritis (S. flexneri in 60, S. sonnei in 32, S. dysenteriae in 1). From hospital and laboratory records, the clinical presentation, antibiotic treatment and duration of hospitalization were indexed as well as the antibacterial resistance pattern of shigellae. RESULTS: Of the hospitalised children 52 (56%) were treated with antibiotics. Ampicillin was given most frequently (71%), followed by the combination trimethoprim-sulfamethoxazole (25%). Isolated shigellae were resistant to ampicillin in 52% and to trimethoprim-sulfamethoxazole in 34%; 42% of the antibiotic treatments were in accordance with susceptibility of the isolated Shigella. CONCLUSION: A high percentage of shigellae isolated on Curacao was resistant to the most frequently used antibiotics ampicillin and trimethoprim-sulfamethoxazole.

Wolfson C. et al. *The Etest for antimicrobial susceptibility testing of Bartonella henselae*. J Antimicrob Chemother. 1996; 38(6) : 963-8.p Abstract: The in-vitro susceptibility of 10 isolates of Bartonella henselae was assessed using the Etest. The organisms, one reference human strain and nine feline isolates, were grown on chocolate agar and the Etests read at days 5, 8 and 11. Six antibiotics, erythromycin, azithromycin, doxycycline, ciprofloxacin, rifampicin and vancomycin were evaluated. The results correlated well with published results using agar dilution. The results confirmed the high in-vitro susceptibility of B. henselae to erythromycin, azithromycin, doxycycline and rifampicin and to a lesser extent ciprofloxacin. The majority of isolates were resistant to vancomycin. Although in-vitro results of B. henselae susceptibility testing may not necessarily correlate with clinical response, the Etest may be a simpler way for laboratories to monitor for the development of resistance particularly in the setting of relapsing infection.

Wolle K. et al. *Prevalence of Helicobacter pylori resistance to several antimicrobial agents in a region of Germany.* Eur J Clin Microbiol Infect Dis. 1998; 17(7) : 519-21.p Abstract: To evaluate the prevalence of resistance among Helicobacter pylori in Germany, the minimum inhibitory concentrations of amoxicillin, tetracycline, clarithromycin, and metronidazole were determined by means of the E test, for 271 Helicobacter pylori isolates cultured from biopsies taken during routine endoscopies in 1996 and 1997. The prevalence of metronidazole resistance was 32.1%, with resistance found more frequently in women (38.5%) than in men (24.4%). Clarithromycin resistance was rare (3.3%). Eight of nine strains resistant to clarithromycin were also resistant to metronidazole. Resistance to either metronidazole or clarithromycin was significantly (P=0.022) higher in patients with duodenal ulcer. No strain was found to be resistant to amoxicillin or tetracycline.

Wong J.D. et al. *Susceptibilities of Yersinia pestis strains to 12 antimicrobial agents.* Antimicrob Agents Chemother. 2000; 44(7) : 1995-6.p Abstract: Ninety-two strains of Yersinia pestis recovered over a 21-year period were evaluated for susceptibility to traditional and newer antimicrobial agents. In vitro resistance was noted only against rifampin and imipenem (approximately 20% of strains). The most active compounds (MIC at which 90% of the isolates tested are inhibited) against Y. pestis were cefixime, ceftriaxone, trimethoprim-sulfamethoxazole, and trovafloxacin.

Woo J.H. et al. *Regulation of toxic shock syndrome toxin-1 gene in Staphylococcus aureus.* Mol Cells. 1997; 7(1) : 28-33.p Abstract: Staphylococcus aureus produces various proteins in response to discrete signals from the external environment like many other pathogenic microorganisms. Certain staphylococcal exoproteins including toxic shock syndrome toxin-1 (TSST-1) are secreted according to the stimuli from the environment, and the quantity synthesized is influenced by a number of different parameters. Using a transposon Tn551-mediated mutagenesis, a mutant (RN 6390) defective in TSST-1 from synthesis was constructed. TSST-1 from wild strain and mutant stain were purified and quantitated from culture supernatants of Staphylococcus aureus. The mutant strain RN 6390 produced only 2% of TSST-1 compared with that produced by the wild strain

RN4282. Southern blot hybridization with a tst (TSST-1 gene) probe indicated that the inactivated chromosomal locus is distinct from the tst. These results suggest that transposition by Tn551 inactivated a chromosomal locus whose activity was essential for the expression of the TSST-1 gene.

Wood K.E. et al. *Phlegmasia cerulea dolens with compartment syndrome: a complication of femoral vein catheterization*. Crit Care Med. 2000; 28(5) : 1626-30.p Abstract: OBJECTIVE: Central venous catheterization is commonly performed in the critically ill. The femoral vein is widely accepted as an insertion site with complications thought to be comparable to other central access sites. We used serial ultrasound examinations with Doppler to examine the evolution of a heretofore undescribed complication of femoral vein catheterization, phlegmasia cerulea dolens with compartment syndrome. DESIGN: Serial ultrasounds were performed in patients before the insertion of femoral venous catheters and sequentially every 48 hrs while the catheters were in place. The noncatheterized leg served as a control. SETTING: A trauma and life support center of a tertiary multidisciplinary critical care unit. PATIENT: A 32-yr-old man with respiratory failure as a consequence of a severe community-acquired pneumonia that required central venous access for antibiotics because no peripheral sites could be obtained. INTERVENTIONS: None. MEASUREMENTS AND MAIN RESULTS: The initial ultrasound examination of both legs before femoral catheter insertion revealed no sign of venous thrombosis. Ultrasound of the catheterized leg at 48 hrs revealed a small nonocclusive thrombosis, whereas the opposite leg remained normal. At 72 hrs, the catheterized leg had clinical and ultrasonographic evidence of a massive thrombosis. A compartment syndrome defined by pressure measurements soon ensued and required emergent surgical release. CONCLUSIONS: This case report and a review of the available literature suggest that thrombosis associated with femoral vein catheterization should be considered when clinicians decide where to obtain central venous access when multiple sites are available. This report also suggests the utility of serial ultrasound examinations to define clinically nonapparent thrombosis as an early indicator of a potentially catastrophic complication.

Woods G.M. et al. *Influence of penicillin prophylaxis on antimicrobial resistance in nasopharyngeal S. pneumoniae among children with sickle cell anemia. The Ancillary Nasopharyngeal Culture Study of Prophylactic Penicillin Study II.* J Pediatr Hematol Oncol. 1997; 19(4) : 327-33.p Abstract: PURPOSE: To evaluate the consequences of prolonged prophylactic penicillin use on the rates of nasopharyngeal colonization with Streptococcus pneumoniae and the prevalence of resistant pneumococcal strains in children with sickle cell anemia. METHODS: Nasopharyngeal specimens were obtained from children with sickle cell anemia (Hb SS or Hb S beta degrees thalassemia) at 10 teaching hospitals throughout the United States. These patients were participating in a prospective, randomized, placebo-controlled trial in which they were prescribed prophylactic penicillin before their fifth birthday and were randomized to prophylactic penicillin or placebo after their fifth birthday (PROPS II). The specimens were cultured for S. pneumoniae, and isolates were analyzed for antimicrobial susceptibility to nine commonly prescribed antimicrobial agents. RESULTS: Of the 226 patients observed, an average of 8.4 specimens were collected per patient. From 1,896 individual culture specimens, 5.5% of the specimens were positive for S. pneumoniae; 27% of patients had at least one positive culture. Nine percent of the study patients had at least one isolate of penicillin intermediate or resistant pneumococci. There was no significant difference in the percent of positive cultures for S. pneumoniae in those patients given penicillin prophylaxis after 5 years of age (4.1%) compared with those patients given placebo after 5 years of age (6.4%). Likewise, there was no significant difference (p = 0.298) in the percent of patients with at least one positive culture for S. pneumoniae in the group given prophylactic penicillin after 5 years of age (21.8%) compared with the group given placebo after 5 years of age (28.3%). There was no difference between the penicillin and placebo groups in the proportion of patients with penicillin intermediate or resistant pneumococci, but there was a trend toward increased carriage of multiply drug-resistant pneumococci in children > 5 years of age receiving prophylactic penicillin compared to children > 5 years of age receiving placebo. The increased colonization rate with multiply drug-resistant organisms of children > 5 years of age receiving penicillin prophylaxis is not statistically significant. CONCLUSIONS: The potential for continued penicillin prophylaxis to contribute to the development of multiply resistant pneumococci should be considered before continuing penicillin prophylaxis in children with sickle cell anemia who are older than 5 years of age. Added to the published data from PROPS II, which demonstrated no apparent advantage to continue prophylaxis, the data support the conclusion that, for children with no history of invasive pneumococcal disease, consideration should be given to discontinue prophylactic penicillin after their fifth birthday.

Woods S.S. et al. *Selection and implementation of a transparent dressing for central vascular access devices.* Nurs Clin North Am. 2000; 35(2) : 385-93.p Abstract: The selection of new central venous access devices (CVADs), line dressing, and nursing clinical practices was guided by the Center for Advanced Nursing Practice's Evidence-Based Practice Model. The model's evidence-triggered, evidence-supported, evidence-observed, and evidence-based phases provided structure that guided a systematic process in which best practice was incorporated into the clinical setting, based on clinician insights, evaluation of authoritative literature, and examination of three CVAD dressings as an intervention using various study methods. This article discusses study findings, recommendations, and implications for nursing practice. CVAD dressing integrity has clinical practice applicability in multiple settings along the care continuum.

Wootton M. et al. *In-vitro activity of HMR 3647 against Streptococcus pneumoniae, Haemophilus influenzae, Moraxella catarrhalis and beta-haemolytic streptococci*. J Antimicrob Chemother. 1999; 44(4) : 445-53.p Abstract: The in-vitro activity of HMR 3647 and seven comparators (azithromycin, clarithromycin, erythromycin A, roxithromycin, penicillin G, ciprofloxacin and levofloxacin) were tested against 207 Streptococcus pneumoniae and 200 beta-haemolytic streptococci. Ten comparators (azithromycin, clarithromycin, erythromycin A, roxithromycin, ampicillin, co-amoxiclav, cefuroxime, cefotaxime, ciprofloxacin and levofloxacin) were tested against 143 Haemophilus influenzae and 58 Moraxella catarrhalis. The MIC50 of HMR 3647 for S. pneumoniae was < or =0.008 mg/L, less than that for the macrolides or quinolones tested. Pneumococci with an erythromycin A MIC of 0.06 mg/L (n = 23) had an MIC50 of HMR 3647 < or =0.008 mg/L, whereas isolates with an erythromycin A MIC > or =1 mg/L (n = 34) had an MIC50 of HMR 3647 of 0.03 mg/L, a four-fold increase. In contrast, the difference in macrolide MIC50s for the two groups was > or =64-fold. The MIC50s foro beta-haemolytic streptococci, classified by Lancefield group, were in the range 0.015 to 0.06 mg/L for HMR 3647. H. influenzae were categorized into three groups according to cefuroxime MIC: <1 mg/L (n = 72); 2-4 mg/L (n = 29); and >4 mg/L (n = 42). The MIC50 of HMR 3647 increased two-fold with increasing cefuroxime MICs; beta-lactam MICs increased much more markedly. The MIC50 of HMR 3647 for M. catarrhalis was 0.03 mg/L. HMR 3647 has good activity against respiratory tract pathogens but in-vitro susceptibility is affected by erythromycin A susceptibility in S. pneumoniae and beta-haemolytic streptococci.

Wright A.B. et al. *Clinical and microbiologic evaluation of a resin modified glass ionomer cement for orthodontic bonding.* Am J Orthod Dentofacial Orthop. 1996; 110(5) : 469-75.p Abstract: This study evaluated the clinical performance of a new resin modified glass ionomer cement, Geristore (Den-Mat Corp., Santa Maria, Calif.), for the bonding of orthodontic brackets and its effect on certain caries-associated microorganisms. This cement has been shown to possess increased

mechanical properties and long-term fluoride release. There were 716 brackets bonded in 40 patients (17 males and 23 females), with a split-mouth technique and a composite resin, Phase II (Reliance, Itasca, III.), as a control. Bond failures were recorded up to 1 year. Plaque scores and plaque samples were taken from the area of the bonding adhesive in 20 patients, before, at 1 week, and 5 months after the placement of brackets. The plaque samples were investigated for the presence of Streptococcus mutans and lactobacilli. The overall bond failure rate was found to be 8.9% for Geristore and 3.1% for Phase II ($p < 0.05$). Labially, there was no significant difference ($p > 0.05$) in bond failure rate: 3.8% for Geristore and 1.7% for Phase II. The proportions of S. mutans and lactobacilli in plaque taken from around Geristore cement were reduced at 1 week and 5 months, when compared with Phase II resin, and this reduction was statistically significant ($p < 0.05$) at 1 week. Results of this study suggest that Geristore may be of use in the labial segments, especially in caries prone patients, in whom demineralization at debond may present an esthetic and restorative problem several years after treatment.

Wright A.J. *The penicillins.* Mayo Clin Proc. 1999; 74(3) : 290-307.p Abstract: The penicillin family of antibiotics remains an important part of our antimicrobial armamentarium. In general, these agents have bactericidal activity, excellent distribution throughout the body, low toxicity, and efficacy against infections caused by susceptible bacteria. The initial introduction of aqueous penicillin G for treatment of streptococcal and staphylococcal infections was an important pharmacologic landmark. The emergence of penicillinase-producing Staphylococcus aureus prompted the development of the penicillinase-resistant penicillins (for example, methicillin, oxacillin, and nafcillin), in which an acyl side chain prevented disruption of the beta-lactamase ring. Subsequently, the aminopenicillins (ampicillin, amoxicillin, and bacampicillin) were developed because of the need for gram-negative antimicrobial activity. Their spectrum initially included Escherichia coli, Proteus mirabilis, Shigella, Salmonella, Listeria, Haemophilus, and Neisseria. The search for a penicillin with additional antimicrobial activity against the Enterobacteriaceae and Pseudomonas aeruginosa led to the development of the carboxypenicillins (carbenicillin and ticarcillin) and the ureidopenicillins (mezlocillin, azlocillin, and piperacillin). Finally, the combination of a beta-lactamase inhibitor (clavulanic acid, sulbactam, or tazobactam) and an aminopenicillin, ticarcillin, or piperacillin has further extended their antibacterial spectra by inhibiting certain beta-lactamases (non-group 1) of resistant bacteria. The development of an ideal penicillin that is rapidly bactericidal, nonsensitizing, nontoxic, bioavailable, and resistant to beta-lactamases and that has a high affinity for penicillin-binding proteins remains the goal.

Wright D.H. et al. *Application of fluoroquinolone pharmacodynamics.* J Antimicrob Chemother. 2000; 46(5) : 669-683.p Abstract: Pharmacodynamics provides a rational basis for optimizing dosing regimens by describing the relationship between drug, host and antimicrobial effect. The successful identification of meaningful pharmacodynamic outcome parameters can, therefore, greatly assist clinicians in making objective prescribing decisions rather than relying on static in vitro MIC data. While pharmacodynamic outcome parameters have been proposed for select antimicrobial agents, their clinical application remains to be defined fully. Quinolone antibiotics are generally considered to have concentration-dependent bactericidal activity and peak/MIC and AUC/MIC ratios have been identified as possible pharmacodynamic predictors of clinical and microbiological outcome as well as the development of bacterial resistance. Investigators have suggested that AUC/MIC ratios of 100-125 or peak/MIC ratios of >10 are required to predict clinical and microbiological success and to limit the development of bacterial resistance. These conclusions are derived primarily from studies of Gram-negative bacteria, and recent data suggest that these ratios may not be applicable for Streptococcus pneumoniae, where an AUC/MIC ratio of <40 appears to be a more accurate predictor. There is considerable variation in pharmacodynamic calculations and outcome parameters appear to be quinolone- and pathogen-specific. Additional prospective clinical research is needed to characterize quinolone pharmacodynamic parameters and answer unresolved questions regarding optimal pharmacodynamic outcome predictors for Gram-positive bacteria, anaerobes and atypical respiratory pathogens.

Wright J.M. *Antifungals: use in high-risk patients.* Crit Care Nurs Q. 1997; 20(3) : 12-20.p Abstract: Advanced medical technology has resulted in a growing population of patients with altered defense mechanisms against nosocomial infections. Fungal infections, primarily Candida species, account for a significant proportion of hospital-acquired infections and are associated with increased morbidity and mortality. This article discusses current issues and controversies related to nosocomial fungal infections and summarizes optimal management strategies.

Wright S.W. et al. *Prevalence and risk factors for multidrug resistant uropathogens in ED patients.* Am J Emerg Med. 2000; 18(2) : 143-6.p Abstract: The purpose of this study was to describe resistance patterns of infecting organisms and determine risk factors for multidrug resistance in patients with urinary tract infections. Retrospective case series of 435 patients age > or =16 with urinary tract infection. Multidrug resistance was defined as resistance to > or = two classes of antibiotics. Demographic, historical, and microbiological data were collected. Univariate analysis and multivariate logistic regression were used to determine risk factors for multidrug resistance. Multidrug resistance was seen in 37% of isolates. Univariate analysis revealed numerous associations with resistance. Multivariate analysis found three independent factors associated with multidrug resistance: urinary catheter use (odds ratio [OR] 2.6, 95% confidence interval [CI] 1.4 to 4.8), age > or = 65 years (OR 3.0, 95% CI 1.7 to 5.4) and antibiotic use (OR 4.6, 95% CI 2.8 to 7.5). Diabetes was also a risk factor when patients with urinary catheters were excluded (OR 2.4, 95% CI 1.1 to 5.3). Resistance was seen in all groups of patients, but was particularly common in older patients and those who used a urinary catheter. Antibiotic use was highly associated with multidrug resistance.

Wright S.W. et al. *Trimethoprim-sulfamethoxazole resistance among urinary coliform isolates.* J Gen Intern Med. 1999; 14(10) : 606-9.p Abstract: OBJECTIVE: A large majority of urinary tract infections are caused by coliform organisms. Trimethoprim-sulfamethoxazole (TMP-SMX) resistance among uropathogens is increasing in many areas. The objective of this study was to determine risk factors for TMP-SMX-resistant coliforms in patients with urinary tract infections. DESIGN: Retrospective case-control study. SETTING: Emergency department of a tertiary care university hospital. PATIENTS: We studied 448 emergency department patients aged 14 years or older with a urinary tract infection caused by a coliform organism. Cases consisted of all patients with a culture-documented urinary tract infection caused by a TMP-SMX-resistant coliform, while control patients were those with a TMP-SMX-sensitive organism. MEASUREMENTS AND MAIN RESULTS: A univariate analysis of clinical variables associated with TMP-SMX resistance was performed. Multiple logistic regression was performed to determine independent predictors of TMP-SMX resistance. Resistance to TMP-SMX was seen in 15% of isolates. Numerous variables were associated with TMP-SMX resistance on the univariate screen. Independent predictors of resistance were diabetes (odds ratio [OR] 3.1; 95% confidence interval [CI] 1.2, 8.4), recent hospitalization (OR 2.5; 95% CI 1.1, 5.7), current use of antibiotics (OR 4.5; 95% CI 2.0, 10.2), and recent use of TMP-SMX (OR 5.1; 95% CI 2.2, 11.5). When those with recent hospitalization were excluded from analysis, independent predictors were current use of any antibiotic (OR 3.5; 95% CI 1.4, 8. 4) and recent use of TMP-SMX (OR 5.9; 95% CI 2.4, 14.3). CONCLUSIONS: Coliforms resistant to TMP-SMX are common in our emergency department. Diabetes, recent hospitalization, and the use of antibiotics, particularly the use of

TMP-SMX, are independent risk factors for TMP-SMX resistance. Clinicians should consider these findings when deciding on antimicrobial therapy for patients with urinary tract infections.

Wu J.J. et al. *Rapid detection of oxacillin-resistant Staphylococcus aureus in blood cultures by an impedance method*. J Clin Microbiol. 1997; 35(6) : 1460-4.p Abstract: The feasibility of using an impedance method for direct detection of oxacillin-resistant Staphylococcus aureus (ORSA) in blood cultures was evaluated. An aliquot (0.1 ml) of the positive blood culture, which showed growth of gram-positive cocci and demonstrated thermonuclease activity, was inoculated into the module well of a Bactometer incubator (bioMerieux Vitek, Hazelwood, Mo.) containing 0.6 ml of Mueller-Hinton agar supplemented with oxacillin (2 microg/ml). The modules were incubated at 37 degrees C, and the change in impedance in each well was continuously monitored by the instrument at 6-min intervals for 24 h. ORSA strains from blood cultures could multiply in the oxacillin-containing medium, and a time point (detection time [DT]) at which an accelerating change of impedance occurred in the medium was obtained, with an average of 5.5 h. The growth of oxacillin-sensitive S. aureus (OSSA) strains was largely inhibited, and no DT was obtained for these strains within an incubation period of 24 h. For 96 positive blood cultures (38 ORSA and 58 OSSA) tested, 36 and 57 were found to be oxacillin resistant and oxacillin sensitive, respectively, by the impedance method. The impedance method had a sensitivity and specificity of 94.7 and 98.3%, respectively, for the detection of ORSA and had an agreement of 96.9% with the disc diffusion method. Comparable results were obtained by the testing of 235 clinical stock cultures of S. aureus (149 ORSA and 86 OSSA). The impedance test is simple for detecting ORSA in blood cultures and may allow proper antimicrobial treatment almost 36 h before the results of the conventional culture methods are available.

Wu J.J. et al. *High incidence of erythromycin-resistant streptococci in Taiwan*. Antimicrob Agents Chemother. 1997; 41(4) : 844-6.p Abstract: The activities of nine antimicrobial agents against 247 isolates of group B, C, F, and G streptococci and viridans group streptococci were studied by the broth microdilution method. Erythromycin resistance was found in 29.7, 41.7, 81.8, 23.5, and 53.3% of the strains of group B, C, F, and G streptococci and viridans group streptococci tested, respectively. Macrolides are not considered an optimal alternative to penicillin in the treatment of streptococcal infections, at least empirically, in Taiwan.

Wu X. et al. *Competence of the internal jugular vein valve is damaged by cannulation and catheterization of the internal jugular vein*. Anesthesiology. 2000; 93(2) : 319-24.p Abstract: BACKGROUND: Experimental results suggest that the competence of the internal jugular vein (IJV) valve may be damaged when the IJV is cannulated for insertion of a central venous catheter. It has further been hypothesized that the risk of causing incompetence of the proximally located valve might be reduced by using a more distal site for venous cannulation. The present study evaluated these hypotheses in surgical patients. METHODS: Ninety-one patients without preexisting incompetence of the IJV valve were randomly assigned to undergo distal or proximal IJV cannulation (> or = 1 cm above or below the cricoid level, respectively). Color Doppler ultrasound was used to study whether new valvular incompetence was present during Valsalva maneuvers after insertion of a central venous catheter, immediately after removal of the catheter, and, in a subset of patients, several months after catheter removal, when compared with baseline findings before cannulation of the IJV. RESULTS: Incompetence of the IJV valve was frequently induced both by proximal and distal cannulation and catheterization of the IJV. Its incidence was higher after proximal than after distal cannulation (76% vs. 41%; $P < 0.01$) and tended to be so after removal of the catheter (47% vs. 28%; $P = 0.07$). Valvular incompetence persisting immediately after removal of the catheter did not recover within 8-27 months in most cases. CONCLUSIONS: Cannulation and catheterization of the IJV may cause persistent incompetence of the IJV valve. Choosing a more distal site for venous cannulation may slightly lower the risk of causing valvular incompetence but does not reliably avoid it.

Wu X. et al. *[Detection of bacterial DNA from cholesterol gallstones by NP-PCR and its clinical significance]*. Chung Hua Wai Ko Tsa Chih. 1997; 35(11) : 663-6.p Abstract: To search for bacterial DNA sequences in cholesterol gallstones with negative bacterial culture. We used nested primers polymerase chain reaction (NP-PCR) technique to amplify bacterial gene fragments were amplified in vitro from DNA extracted from cholesterol gallstones. Comparative 16S ribosomal RNA sequence analysis was used for elucidation of bacterial identification. The gallbladder gallstones of 30 patients were analyzed. Bacterial DNA was found in the stones of 26 patients. There was no difference either in cholesterol and water content or in harboring bacterial DNA of gallstones. E. coli-related DNA fragments were found in the stones of 8 patients (26.67%). Propionibacteria type DNA was found in the stones of 7 patients (23.33%). Stones of 2 patients (6.67%) harbored bacterial gene fragments with similarity of Streptococcus pyogenes. A more heterogeneous sequence collection was found in 7 patients (23.33%) and could be assigned to the multiple bacterial infections. Another stones of 2 patients (6.67%) had bacterial DNA with lower molecularweight which might be related to some unidentified bacteria. The results suggested that most cholesterol gallstones harbor bacterial DNA. It is important to determine whether these microorganisms are innocent bystanders or active participants in cholesterol gallstone formation.

Wust J. et al. *Antimicrobial susceptibilities and serotypes of invasive Streptococcus pneumoniae strains in Switzerland*. J Clin Microbiol. 1995; 33(12) : 3159-63.p Abstract: In 1993 and 1994, 10 microbiological laboratories in Switzerland collected 351 strains of Streptococcus pneumoniae from invasive infections. Susceptibilities to the main representatives of the chemical classes were as follows: penicillin, 93%; chloramphenicol, 92%; erythromycin, 94%; sulfamethoxazole-trimethoprim, 86%; tetracycline, 92%; vancomycin, 100%. Forty-three strains showed resistance to one agent, and 35 strains showed resistance to two or more antimicrobial agents simultaneously; i.e., 22% of the strains were resistant to at least one antimicrobial agent. Four strains (1%) were fully resistant to penicillin, whereas 21 strains (6%) showed reduced susceptibility. Of these 25 strains not fully susceptible to penicillin, 10 were resistant to one, 3 were resistant to two, and 8 were resistant to three additional antimicrobial agents. Of the quinolones, sparfloxacin was the most active substance, with an MIC at which 90% of the strains are inhibited of 0.5 mg/liter. The most common serotypes were types 6 (13.6% of isolates), 7 (10.5%), 19 (10.5%), 14 (9.1%), and 1 (8.5%) as well as 3 and 23 (8.0% each). Reduced susceptibility to penicillin was found mainly among serotypes 6, 14, 19, and 23. The currently available 23-valent pneumococcal vaccine covers 320 (91%) of the pneumococci isolated. Regional differences within Switzerland with regard to serotypes and antimicrobial resistance were not observed.

X

Xiol X. et al. *Spontaneous bacterial empyema in cirrhotic patients: a prospective study.* Hepatology. 1996; 23(4) : 719-23.p Abstract: Spontaneous bacterial empyema (SBEM) is an infection of a preexisting hydrothorax in cirrhotic patients and has seldom been reported. To determine its incidence and primary characteristics, all cirrhotic patients with pleural effusion underwent thoracentesis at our hospital either on admission or when an infection was suspected. Pleural fluid (PF) study included biochemical analysis, polymorphonuclear (PMN) leukocyte count, and culture by two methods: conventional and modified (inoculation of 10 mL of PF into a blood culture bottle at the bedside). SBEM was defined according to previously

reported criteria: PF culture positive or PMN count greater than 500 cells/micro L, and exclusion of parapneumonic effusions. Sixteen of the 120 (13 percent) cirrhotic patients admitted with hydrothorax had 24 episodes of SBEM. In 10 of the 24 episodes (43 percent), SBEM was not associated with spontaneous bacterial peritonitis (SBP). PF culture was positive by the conventional method in 8 episodes (33 percent) and by the modified method (blood culture inoculation) in 18 (75 percent) (P =.004, McNemar). The microorganisms identified in PF were Escherichia coli in 8 episodes, Streptococcus species in 4, Enterococcus species in 3, Klebsiella pneumoniae in 2, and Pseudomonas stutzeri in 1. All episodes were treated with antibiotics without inserting a chest tube in any case. Mortality during treatment was 20 percent. We conclude that SBEM is a common complication of cirrhotic patients with hydrothorax. Almost half of the episodes were not associated with SBP; thus, thoracentesis should be performed in patients with cirrhosis, pleural effusion, and suspected infection. Culture of PF should be performed by inoculating 10 mL into a blood culture bottle at the bedside.

Xiong R. et al. *A mathematical model for bacterial inactivation.* Int J Food Microbiol. 1999; 46(1) : 45-55.p Abstract: The first order kinetic model, the Buchanan model and Cerf's model, can model a linear survival curve, a survival curve with a shoulder and a survival curve with a tailing, respectively. However, they are not suitable for fitting a sigmoidal survival curve. The three models were integrated into a new model that was capable of fitting the four most commonly observed survival curves: linear curves, curves with a shoulder, curves with a tailing (biphasic curves) and sigmoidal curves. The new model was compared with the Whiting-Buchanan model using the survival curves of Staphylococcus aureus. The goodness-of-fit of the proposed model is practically as good as that of the Whiting-Buchanan model. Compared with the Whiting-Buchanan model, the proposed model has a more mechanistic background. Since for non-linear survival curves, such as biphasic and sigmoidal curves, the t(m-D) value (the time required for an m-log-cycle reduction of microorganisms under a given condition) cannot be estimated accurately by the existing or traditional method, a new method is also proposed to predict accurately the t(m-D) value for non-linear survival curves.

Xu W. et al. *[An analysis of bacterial resistance to antimicrobial agents in a burn centre].* Chung Hua Cheng Hsing Shao Shang Wai Ko Tsa Chih. 1998; 14(3) : 199-202.p Abstract: OBJECTIVE: To investigate bacterial resistance to antimicrobial agents in the background of extensive employment of third-generation cephalosporins in the treatment of burn infection. METHODS: Bacterial susceptibility testing was carried out using Kirby-Bauer method. RESULTS: Out of 259 Gram negative bacilli isolates, 31% of these strains were all resistant to cefotaxime, ceftriaxone, cefoperazone and ceftazidime. In vitro test, susceptibility of 52% third-generation cephlosporins resistant strains were restored by cefoperazone/sulbactum. 23.8% of P. aeruginosa were resistant to imipenem, 51.2% to ciprofloxacin. 28.6% of A. anitratum were resistant to imipenem, 21.4% to ciprofloxacin. 9.9% of enterobacteriaceae were resistant to imipenem, 20.4% to ciprofloxacin. 26.9% of MRSA were resistant to imipenem, 73% to ciprofloxacin. No norvancomycin resistance was detected. 2.7% of E. faecalis were resistant to norvancomycin. CONCLUSION: It is likely that the observed resistance to third-generation cephalosporins may be partially due to chromosome-mediated type-1 beta- lactamase.

Xu Y. et al. *Evaluation of the in vitro antimicrobial activity of cefepime compared to other broad-spectrum beta-lactams tested against recent clinical isolates from 10 Chinese hospitals. Chinese Antimicrobial Resistance Study Group.* Diagn Microbiol Infect Dis. 1999; 35(2) : 135-42.p Abstract: A surveillance study was initiated in China in 1998 in which 10 medical centers participated. The susceptibility profiles of 996 commonly occurring pathogens belonging to 10 different species groups were tested by the Etest (AB BIODISK, Solna, Sweden) against six broad-spectrum beta-lactam antimicrobial agents (cefepime, ceftazidime, ceftriaxone, imipenem, cefoperazone/sulbactam and piperacillin or oxacillin). Quality control was closely monitored and cefepime- and/or imipenem-resistant Enterobacteriaceae were referred to the reference laboratory (University of Iowa College of Medicine, Iowa City, IA) for confirmation. The isolates of Citrobacter spp. and Enterobacter spp. were generally inhibited by imipenem (100% susceptible) and cefepime (89-94%), but were more resistant to the other drugs tested (< or = 74% susceptible). The indole-positive Proteus spp. and Serratia spp. isolates were > 94% susceptible to all tested beta-lactams except piperacillin. Organisms capable of producing extended spectrum beta-lactamases (ESBLs), which included Klebsiella spp. and Escherichia coli, were most susceptible to imipenem (100%) and cefepime (> 90%). Among the non-enteric Gram-negative bacilli, all drugs were marginally active against Pseudomonas aeruginosa (MIC90s, 32-> 256 ug/mL) and the Acinetobacter spp. were rather resistant to all the compounds, except imipenem (96% susceptible). All strains of Staphylococcus spp. were susceptible to the tested antimicrobials except for ceftazidime, which had a low potency (MIC90, 12-16 micrograms/mL) against Chinese isolates with MICs that fell into the intermediate category. Cefepime, the fourth-generation cephalosporin, showed a very broad spectrum of activity against Gram-negative pathogens as well as oxacillin-susceptible Staphylococcus spp. that was comparable with imipenem (widest spectrum) and superior to the other tested beta-lactams overall. Continued monitoring of clinical strains in China seems necessary to guide chemotherapy.

Y

Yagan M.B. *Hospital-acquired pneumonia and its management.* Crit Care Nurs Q. 1997; 20(3) : 36-43.p Abstract: Hospital-acquired pneumonia (HAP) is an important cause of morbidity and mortality in the United States. Classifying the patient's pneumonia by the presence or absence of risk factors helps determine what organisms need to be considered as etiologic agents so that empiric antibiotic therapy can be initiated while cultures are pending. Medical care personnel can also use preventive strategies to help decrease the incidence of nosocomial pneumonia. This article will discuss pathogenesis, diagnosis, management, and prevention of HAP.

Yagupsky P. et al. *Acquisition, carriage, and transmission of pneumococci with decreased antibiotic susceptibility in young children attending a day care facility in southern Israel.* J Infect Dis. 1998; 177(4) : 1003-12.p Abstract: The prevalence and transmission of antimicrobial drug-resistant pneumococci was studied in 48 children attending a day care facility in southern Israel. Nasopharyngeal cultures were obtained every 2 weeks for 10 months, and antibiotic susceptibility of isolates was determined by disk diffusion and E-test. Relatedness of isolates was investigated by capsular typing, ribotyping, and arbitrarily primed polymerase chain reaction. Pneumococci were recovered during 362 (63%) of 573 fortnights, and 219 (60%) of these isolates showed decreased susceptibility to at least one drug; 154 (43%) were intermediately susceptible to penicillin and 51 (14%) were multiresistant. Combining the different typing methods showed that a limited number of clones circulated in the facility. Clones exhibiting decreased antibiotic susceptibility (especially 23F, intermediately susceptible to penicillin and resistant to trimethoprim-sulfamethoxazole, and multiresistant 6B) were more frequently isolated and persisted longer than did fully susceptible clones. By multivariate analysis, carriage of organisms with decreased antibiotic susceptibility was associated with young age, female sex, winter season, and exposure to antimicrobial drugs during the previous month.

Yajko D.M. et al. *Colorimetric method for determining MICs of antimicrobial agents for Mycobacterium tuberculosis.* J Clin Microbiol. 1995; 33(9) : 2324-7.p Abstract: A colorimetric method for quantitative measurement of the susceptibility of Mycobacterium tuberculosis to antimicrobial agents is described. The method utilizes an oxidation-reduction dye, Alamar blue, as an indicator of growth. By this method, MICs of isoniazid, rifampin, streptomycin, and ethambutol were determined for 50 strains of M. tuberculosis. Colorimetric MIC results were available on the 7th, 10th, or 14th day of incubation for 29 (58%), 14 (28%), and 7 (14%) of the 50 strains, respectively. When MIC susceptibility results were compared with results obtained by the agar proportion method, increased levels of resistance detected by agar proportion were associated with higher MICs obtained by the colorimetric method. Tentative interpretive criteria for colorimetric MIC results which showed good agreement with results obtained by the agar proportion method were established. Interpretive agreement between the two methods was 98% for isoniazid, rifampin, and ethambutol and 94% for streptomycin. Overall, there was agreement between the two methods for 194 of 200 test results (97%). The colorimetric method is a rapid, quantitative, nonradiometric method for determining the antimicrobial susceptibility of M. tuberculosis.

Yamada T. et al. *[Multicenter study of cardiac events and anesthetic management of patients with ischemic heart diseases undergoing noncardiac surgery].* Masui. 2000; 49(6) : 673-9.p Abstract: We designed a joint research project to investigate the incidence of ischemic heart diseases in patients undergoing noncardiac surgery and to define the risk of perioperative cardiac complications in these patients. Of the 8358 surgical patients in the 8 departments of anesthesiology between March 1997 and June 1997, 328 (3.9%) had ischemic heart diseases. Among the 328 patients, 54 (16.4%) developed perioperative cardiac events, including myocardial infarction (3 patients) and either lethal or potentially dangerous dysrhythmias (51 patients). Preoperative cardiac assessments were performed while the anesthetic techniques including intensive monitoring and perioperative prophylactic therapy were also employed. Patients with ischemic heart diseases received various types of preoperative evaluation to identify the degree of coronary artery disease and to assess the overall cardiac function. The patients were monitored using a multilead electrocardiogram, an arterial line, a central venous catheter, a pulmonary artery catheter, and by transesophageal echocardiography intraoperatively. Therapeutically, isosorbide, nitroglycerin, beta-blockers, calcium channel blockers, and/or nicorandil were administered to prevent perioperative ischemia. So far, no generally accepted management strategies have been established in patients with cardiovascular disorders based on large-scale outcome trials in Japan. Therefore, nationwide large multicenter trials are awaited with interest in order to establish helpful guidelines to improve the perioperative management and to reduce ischemia in cardiac patients undergoing noncardiac surgery.

Yamaguchi K. et al. *[Activities of antimicrobial agents against 5,180 clinical isolates obtained from 26 medical institutions during 1998 in Japan. Levofloxacin—Surveillance Group].* Jpn J Antibiot. 2000; 53(6) : 387-408.p Abstract: The surveillance study was conducted to determine the antimicrobial activity of fluoroquinolones (ofloxacin, levofloxacin, ciprofloxacin, tosufloxacin) and other 20 antimicrobial agents against 5,180 clinical isolates obtained from 26 medical institutions during 1998 in Japan. The resistance to fluoroquinolones was remarkable in Enterococci, methicillin-resistant staphylococci and Pseudomonas aeruginosa from UTI. However, many of the common pathogens such as Streptococcus pneumoniae including penicillin-resistant isolates, methicillin-susceptible Stahylococcus aureus, Moraxella catarrhalis, the family of Enterobacteriaceae, Haemophilus influenzae including ampicillin-resistant isolates have been kept to be susceptible to fluoroquinolones. About 90% of P. aeruginosa isolates from RTI were susceptible to fluoroquinolones. In conclusion, the results from this surveillance study suggest that fluoroquinolones are useful in the treatment of various bacterial infections including respiratory infections.

Yamaguchi K. et al. *[In vitro activities of 23 antimicrobial agents against 4,993 gram-positive and gram-negative bacterial strains isolated from multicenter of Japan during 1994—in vitro susceptibility surveillance. Levofloxacin-Surveillance Group].* Jpn J Antibiot. 1999; 52(2) : 75-92.p Abstract: In a surveillance study conducted during 1994 at 24 medical institutes from different geographical areas of Japan, the susceptibility of clinical isolates to twenty three comparative agents, such as ofloxacin, levofloxacin, ciprofloxacin, tosufloxacin, ampicillin, clavulanic acid/amoxicillin, oxacillin, piperacillin, cefaclor, cefotiam, cefdinir, cefclidin, ceftazidime, cefpirome, imipenem, aztreonam, vancomycin, minocycline, chloramphenicol, clarithromycin, sulfamethoxazole/trimethoprim, amikacin, and gentamicin, were tested by the standard broth microdilution method. A total of 4,993 isolates tested in this study included Streptococcus pneumoniae, methicillin susceptible Staphylococcus aureus (MSSA), methicillin resistant Staphylococcus aureus (MRSA), coagllase negative streptococci (CNS), Enterococcus faecalis, Enterococcus faecium, Enterobactericeae, Pseudomonas aeruginosa from patients with urinary tract infections or respiratory tract infections, and Haemophilus influenzae. For MSSA, S. pneumoniae, Enterobacteriaceae, and H. influenzae, more than 70% of the isolates was susceptible to fluoloquinolones. However, resistance occurred in more than 50% of MRSA and P. aeruginosa isolated from UTI. Fluoroquinolones were found to be effective against high level penicillin-resistant S. pneumoniae, the third generation cephem-resistant Enterobacteriaceae and ampicillin-resistant H. influenzae.

Yamaguchi S. et al. *Stimulation of phagocytosis and phagosome-lysosome (P-L) fusion of human polymorphonuclear leukocytes by sulfatide (galactosylceramide-3-sulfate).* FEMS Immunol Med Microbiol. 1996; 13(2) : 107-11.p Abstract: Recently, extensive attention has been paid to the physiological function of glycosphingolipids (GSLs) of mammalian cell membranes. Among a variety of GSLs, sulfatide (galactosylceramide-3-sulfate) has been proposed to be a specific receptor or binding molecule to microorganisms. However, no report has appeared on the direct stimulation by sulfatide for cellular function differentiation in phagocytic cells. We found that sulfatide showed a marked stimulation for phagocytic processes of human peripheral polymorphonuclear leukocytes (PMN) using heat-killed cells of Staphylococcus aureus coated with isolated lipid. Among mammalian acidic GSLs, sulfatide showed the highest stimulative activity for adhesion, phagocytosis and phagosome-lysosome (P-L) fusion by PMN. On the other hand, neutral GSLs did not stimulate essentially. Relative phagocytic rate of sulfatide-coated staphylococci was six times higher than that of the non-coated control and P-L fusion rate was ten times at maximum, respectively. Although the promotion mechanism of sulfatide for such phagocytosis or P-L fusion is not clear, it was strongly suggested that the existence of negative charges on carbohydrate moiety may be essential for the induction of differentiation of phagocytic cell function via signal transduction systems.

Yamamoto T. et al. *Emergence of tetracycline resistance due to a multiple drug resistance plasmid in Vibrio cholerae O139.* FEMS Immunol Med Microbiol. 1995; 11(2) : 131-6.p Abstract: Of the 173 clinical strains of Vibrio cholerae O139 isolated from India, Bangladesh, and Thailand tested, six strains from India were resistant to tetracycline, ampicillin, chloramphenicol, kanamycin, and gentamicin. These six strains harbored a self-transmissible plasmid that mediated resistance to tetracycline, ampicillin, chloramphenicol, kanamycin, gentamicin, sulfamethoxazole, trimethoprim, and O/129. The multiple drug resistance plasmids were 200 kb in size and belonged to the incompatibility group C. Although a majority of the O139 strains (94.8%) were highly resistant to streptomycin, sulfamethoxazole, trimethoprim, and O/129, the tetracycline-susceptible strains so far tested were plasmid-negative. The data suggest the existence of two distinct

multiple antimicrobial agent resistance (MAR) patterns in V. cholerae O139.

Yamamoto T. et al. *[Status of emerging drug resistance in Shiga toxin-producing Escherichia coli in Japan during 1996: a minireview].* Nippon Rinsho. 1998; 56(10) : 2718-29.p Abstract: A total of 192 Shiga toxin-producing Escherichia coli (STEC) strains isolated from the 1996 episodes in Japan were tested for their in vitro susceptibilities to 41 antimicrobial agents. Drug resistance was found with kanamycin, tetracycline, nalidixic acid, ampicillin, streptomycin, sulfamethoxazole, and fosfomycin. The expression of fosfomycin resistance was greatly dependent on culture conditions and resistance was detected (e.g.) when Mueller-Hinton agar or nutrient agar supplemented with horse blood (or glucose-6-phosphate) was used as test media. All the STEC strains belonging to serotype O26 exhibited fosfomycin resistance. Multiple drug-resistant strains spread 8 of 18 prefectures examined. Out of eleven O157: H7 outbreaks, only one outbreak revealed infections due to multiple drug-resistant strains which carried an R plasmid. Tetracycline, streptomycin, and sulfamethoxazole resistance, which was previously described with O157: H7 strains isolated from a large outbreak as well as sporadic cases in the United States, were also found in Japan with human and bovine isolates (but not with porcine isolates). In contrast, the STEC strains were highly susceptible to newer quinolones, cephems, trimethoprim, gentamicin, and azithromycin. No drug resistance was observed with dibekacin and minocycline.

Yamani M.I. et al. *Aspects of microbiological and chemical quality of turmus, lupin seeds debittered by soaking in water.* J Food Prot. 1998; 61(11) : 1480-3.p Abstract: Eleven species of spherical lactic acid bacteria (LAB) belonging to the genera Leuconostoc, Lactococcus, Enterococcus and Pediococcus were the predominant microorganisms in 40 samples of turmus, ready-to-eat lupin seeds debittered by boiling and soaking in water. The average counts of the LAB in the 20 winter samples and the 20 summer samples were 7.4 and 8.7 log CFU/g, respectively. The averages of the Enterobacteriaceae counts were 5.1 and 6.6 log CFU/g, respectively, and the 11 species isolated belonged to the genera Enterobacter, Citrobacter, Escherichia and Klebsiella. The average yeast counts in winter and summer samples were 3 and 3.2 log CFU/g, respectively, and the 5 species isolated were in the genera Saccharomyces, Cryptococcus, Rhodotorula and Candida. Although Salmonella was not isolated from any sample and the Staphylococcus aureus count in all samples was < 1 log CFU/g, microbial hazards could be associated with the high Enterobacteriaceae counts and the presence of Escherichia coli. Total alkaloid concentration in 30% of the samples examined was higher than 0.02%, thus making the seeds a potential chemical hazard. Boiling the turmus directly before consumption and discarding the seeds with a bitter taste may help in avoiding some of the microbial and chemical hazards which could be associated with turmus consumption.

Yamazaki T. et al. *[Antimicrobial susceptibility testing for Mycobacterium tuberculosis by the bioluminescence assay of mycobacterial ATP using filamentous cell treatment].* Rinsho Byori. 2000; 48(2) : 167-73.p Abstract: The antimicrobial susceptibility testing for Mycobacterium tuberculosis by the bioluminescence assay of adenosine triphosphate(ATP) derived from living mycobacteria was improved introducing filamentous cell treatment(FCT) reported for beta-lactam susceptibility test of Pseudomonas aeruginosa by Hattori. Before ATP extraction, bacterial cells were treated with the FCT reagent for 30 minutes at room temperature. Adenosine phosphate deaminase in the FCT reagent simultaneously digested the extracted ATP and released ATP in a liquid culture of M. tuberculosis H37Rv and the RLU level was decreased markedly. Using this improved ATP method, we determined the ATP contents of M. tuberculosis inoculated into Middlebrook 7H9 broth medium with or without drugs. In ethambutol(EB) susceptibility, the ATP method reported previously, showed false-resistance when judged within 7 days. To eliminate false-resistance in EB susceptibility we applied the modified ATP method with FCT treatment to strains determined EB susceptible by reference methods. Using this modified ATP method, we could judge EB susceptibility of 5 ATCC reference strains within 3 days, and these of 15 clinical isolates of M. tuberculosis within 5 days. And all the results obtained were coincident between the ATP method and the reference methods. The reproducibility of this modified ATP method was evaluated with six ATCC reference strains at the concentrations of 0.1 microgram/ml of isoniazid(INH), 2.0 micrograms/ml of rifampicin(RFP), 2.5 micrograms/ml of EB, 2.0 micrograms/ml of streptomycin(SM), and 5.0 micrograms/ml of kanamycin(KM). The test was repeated six times. Reduction of ATP contents were observed in susceptible strains but not in resistant ones within 3 days of cultivation and susceptibilities to drugs could be determined within 3 days at every time when combined FCT to the ATP method. And highly reproducible results were obtained. It is strongly suggested that this modified method is simple, rapid, highly reproducible and nonradiometric, and could be used for the assessment of drug susceptibility for M. tuberculosis.

Yang Y.J. et al. *High rates of antimicrobial resistance among clinical isolates of nontyphoidal Salmonella in Taiwan.* Eur J Clin Microbiol Infect Dis. 1998; 17(12) : 880-3.p Abstract: To assess trends in antimicrobial-resistant Salmonella infections from 1989 to 1996 in southern Taiwan, the minimum inhibitory concentrations (MICs) of 14 antibiotics or antibiotic combinations were determined by the agar dilution method for 297 clinical isolates of nontyphoidal Salmonella. The rates of resistance to ampicillin, chloramphenicol, and tetracycline were 65, 67, and 78%, respectively. Resistance to trimethoprim-sulfamethoxazole (TMP-SMX) increased from 25% in 1989-1992 to 35% in 1993-1996 (P=0.057). For new quinolones and extended-spectrum cephalosporins, no resistant strains were encountered. Multiple resistance to more than five antimicrobial drugs doubled from 10.6% in 1989-1992 to 19.7% in 1993-1996. Multiply resistant salmonellae were isolated more commonly from blood samples than from feces (30% vs. 14%, P<0.05). In Taiwan, ampicillin, chloramphenicol, and even TMP-SMX are no longer the drugs of choice for treatment of serious nontyphoidal Salmonella infections. Extended-spectrum cephalosporins are now the preferred drugs in Taiwan for treatment of invasive Salmonella infections in children.

Yap A.U. et al. *Fluoride release and antibacterial properties of new-generation tooth-colored restoratives.* Oper Dent. 1999; 24(5) : 297-305.p Abstract: The aim of this study was to compare the amounts and pattern of fluoride release and antibacterial properties of new-generation restoratives over a 35-day period. Materials evaluated included fluoride-releasing composites (Tetric, Experimental X), compomers (Dyract, Compoglass), and a resin-modified glass-ionomer cement (Fuji II LC). A conventional glass ionomer (Fuji II Cap) was used as a control for fluoride-release testing. Five samples of each restorative material were evaluated for daily fluoride release over a 35-day period by means of ion chromatography. Ranking of materials from least to greatest total fluoride release over 35 days was as follows: Tetric < Experimental X < Dyract < Fuji II LC < Compoglass < Fuji II Cap. Fuji II Cap had significantly greater fluoride release than all other materials evaluated. Fuji II Cap, Fuji II LC, and Compoglass had similar patterns of fluoride release characterized by a high initial release that was many times that released later. The fluoride-releasing composites evaluated stopped releasing fluoride by day 14. Antibacterial testing was conducted using the agar diffusion inhibitory test. Five samples of each restorative were assessed at baseline and weekly intervals up to 35 days. The microorganisms used were Lactobacillus casei, Streptococcus mutans, and Streptococcus sobrinus. IRM, a zinc oxide/eugenol cement, was used as the baseline control. None of the restorative materials evaluated affected the growth of L casei, S sobrinus, or S mutans at all time periods including baseline, where fluoride was detected in the agar beneath the specimen disks. There was no correlation noted between fluoride-release potential and antibacterial properties.

Yasin R.M. et al. *Comparison of E-test with agar dilution methods in testing susceptibility of N. gonorrhoeae to azithromycin.* Sex Transm Dis. 1997; 24(5) : 257-60.p Abstract: BACKGROUND AND OBJECTIVES: The antimicrobial susceptibility pattern of Neisseria gonorrhoeae varies from one country to another and may also change with time. To monitor these variations and changes, it is desirable to have a method that is simple and reproducible. This study was undertaken to determine the in vitro susceptibility of N. gonorrhoeae to azithromycin and to assess the reliability of results obtained using E-test methodology for determination of the minimum inhibitory concentration (MIC) of azithromycin. STUDY DESIGN: The MICs for 135 clinical isolates of N. gonorrhoeae were determined by a modified Kirby-Bauer method recommended by the National Committee for Clinical Laboratory Standards against penicillin, cefuroxime, ceftriaxone, norfloxacin, tetracycline, kanamycin, spectinomycin, and azithromycin. The MIC of azithromycin was determined by both the E-test and agar dilution method. All tests were done simultaneously. RESULTS: The MIC of azithromycin to all 135 isolates ranged from 0.078 to 0.25 microgram/ml with the agar dilution method and from 0.016 to 0.50 microgram/ml with the E-test. The MIC50 and MIC90 of azithromycin were 0.064 microgram/ml and 0.125 microgram/ml, respectively, by the agar dilution method, whereas they are slightly higher by the E-test method. Seventy-six of the isolates were beta-lactamase producers and 69 were high-level tetracycline-resistant N. gonorrhoeae. There was no difference in the MIC50 and MIC90 of azithromycin in these groups of isolates. The percentage agreement within the acceptable +/-1 log2 dilution difference between MICs obtained by E-test and those obtained by the agar dilution method was 97.8%. CONCLUSIONS: Azithromycin has a very good in vitro antigonococcal activity, and the E-test is a reliable method to determine the MIC of azithromycin against N. gonorrhoeae.

Yasuda M. et al. *In vitro selection of fluoroquinolone-resistant Neisseria gonorrhoeae harboring alterations in DNA gyrase and topoisomerase IV.* J Urol. 2000; 164(3 Pt 1) : 847-51.p Abstract: PURPOSE: We attempted to select increasingly fluoroquinolone-resistant strains of Neisseria gonorrhoeae in vitro and to assess whether selected mutants harbored alterations in the GyrA subunit of DNA gyrase and the ParC subunit of DNA topoisomerase IV, which were analogous to those in fluoroquinolone-resistant clinical isolates. MATERIALS AND METHODS: A fluoroquinolone-susceptible strain was exposed to norfloxacin in vitro. Selected mutants were sequentially exposed to norfloxacin, and this procedure was repeated. For 11 mutants, minimum inhibitory concentrations (MICs) of antimicrobial agents were determined, and mutations in the region corresponding to the quinolone resistance-determining region (QRDR) of the Escherichia coli gyrA gene and the analogous region of the parC gene were analyzed. RESULTS: Mutants obtained in one step exhibited significantly increased MICs of norfloxacin, ofloxacin and ciprofloxacin and had a single amino acid change in GyrA. Two-step mutants exhibited significantly higher norfloxacin MICs. Three of four two-step selected strains had single amino acid changes in both GyrA and ParC. Three-step mutants exhibited further increases in fluoroquinolone MICs and were assigned to the ciprofloxacin-resistant category. Two had a double amino acid change in GyrA, and one had a double GyrA change and a single amino acid change in ParC. CONCLUSION: We selected fluoroquinolone-resistant strains that carried GyrA and ParC alterations analogous to those in clinical isolates. The serial accumulation of changes in the QRDR of GyrA and the analogous region of ParC was associated with a stepwise increase in fluoroquinolone resistance, although the development of additional alterations in other regions of GyrA and ParC or other mechanisms of fluoroquinolone resistance also might contribute to the enhancement in fluoroquinolone resistance. The clinical emergence of fluoroquinolone-resistant strains may be due to in-vivo stepwise selection of strains with genetic alterations in GyrA and ParC, as observed here in the in-vitro selection of fluoroquinolone-resistant mutants.

Yates R.R. *New intervention strategies for reducing antibiotic resistance.* Chest. 1999; 115(3 Suppl) : 24S-27S.p Abstract: Rising antibiotic resistance rates among bacterial pathogens have resulted in increased morbidity and mortality from nosocomial infections. Widespread use of certain antibiotics, particularly third-generation cephalosporins, has been shown to foster development of generalized beta-lactam resistance in previously susceptible bacterial populations. Reduction in the use of these agents (as well as imipenem and vancomycin) and concomitant increases in the use of extended-spectrum penicillins and combination therapy with aminoglycosides have been shown to restore bacterial susceptibility. Studies have shown that education-based methods, as opposed to coercive measures, are effective in changing the prescribing habits of physicians. Cooperative interaction among infectious-disease physicians, clinical pharmacists, microbiology-laboratory personnel, and infection-control specialists is essential to provide useful suggestions regarding antibiotic choice and dosing to the prescribing physician in real time. Several hospitals have implemented antimicrobial resistance management programs based on these findings. The results of these programs validate the use of a multidisciplinary, education-based, antibiotic-resistance management approach.

Yeung S.J. et al. *Use of long-term intravenous phosphate infusion in the palliative treatment of tumor-induced osteomalacia.* J Clin Endocrinol Metab. 2000; 85(2) : 549-55.p Abstract: Tumor-induced osteomalacia is characterized by paraneoplastic defects in vitamin D metabolism, proximal renal tubular functions, and phosphate transport. The resulting hypophosphatemia can cause generalized pain and muscle weakness, which significantly affect the quality of life of the patients. Palliative treatment with calcium, vitamin D, and phosphate replacement is indicated for patients in whom the causative tumor cannot be completely resected. In this report we describe a case of tumor-induced osteomalacia in whom adequate oral doses of phosphate could not be used because of gastrointestinal side-effects. Long term (3-6 months) iv phosphate infusion delivered by ambulatory infusion pumps in combination with oral calcium and vitamin D was used successfully to decrease pain and increase muscle strength. Careful monitoring of serum calcium, phosphate, and creatinine levels and reliable microinfusion technology have allowed the long term use of iv phosphate infusion without serious morbidity. This patient received repeated (three times) phosphate infusions over 8 yr, resulting in laboratory and symptomatic improvement after each course. However, this patient did suffer two episodes of central venous catheter-related infection. Because of potentially serious complications, such as severe hypocalcemia, calcified right ventricular thrombi, and nephrocalcinosis, long term iv phosphate infusion should be reserved for patients who cannot tolerate adequate doses of oral phosphate and for whom the benefits outweigh the risks.

Yinnon A.M. et al. *Analysis of 5 years of bacteraemias: importance of stratification of microbial susceptibilities by source of patients.* J Infect. 1997; 35(1) : 17-23.p Abstract: Many factors need to be considered when selecting empiric antimicrobial treatment for infections; foremost are the principal pathogens causing the diagnosed infection and their antimicrobial susceptibility patterns. These susceptibilities are location specific. This study analyses blood cultures of a 5-year period (1990-94) at a 550 bed community hospital and stratifies antimicrobial susceptibilities by source of patients. Data included: date of culture, patient location, number of positive bottles with the same organism over a period of 2 weeks and results of susceptibility testing. Positive cultures from patients in the Emergency Department were deemed to reflect community-acquired strains: positive cultures from patients in the Intensive Care Unit were considered nosocomial organisms. During the study period 52055 blood cultures were drawn; 5652 (11%) from 2742 patients grew at least one organism, excluding skin contaminants. Organisms cultured most frequently were: Enterobacteriaceae: 1162 patients (42%); Staphylococcus aureus: 442 (16%); Enterococcus; 429 (16%); and Pseudomonas: 196 (7%). Antimicrobial susceptibility percentages of Enterobacteriaceae

from Emergency Room patients (n = 370) were significantly greater to all tested antimicrobials than from ICC patients (n = 161) (P < 0.001). Overall, 143 isolates of S. aureus from 442 patients (32%) were methicillin resistant (MR); stratification by department revealed a range of 20/142 (14%) MR in community acquired strains to 49/67 (73%) from ICU patients (P < 0.001). Detailed tables with antimicrobial susceptibilities according to strains, and stratified by source of patients are presented. When selecting empiric antimicrobial therapy for patients with bacterial infections, it is crucially important to physicians to have access to antimicrobial susceptibility percentages, stratified by source of patients.

Yokota N. et al. *[Antibacterial activities of cefmenoxime against recent fresh clinical isolates from patients in sinusitis].* Jpn J Antibiot. 1995; 48(5) : 602-9.p Abstract: In order to evaluate antimicrobial activity of cefmenoxime (CMX), minimum inhibitory concentrations (MICs) of CMX and control drugs were determined against clinical isolates from patients of sinusitis that were obtained in our laboratory from October of 1993 to March of 1994. The results are summarized as follows; 1. CMX showed strong antimicrobial activities against Streptococcus pneumoniae, Haemophilus influenzae and Moraxella subgenus Branhamella catarrhalis that were 3 major aerobic bacteria from sinusitis. Antimicrobial activities of CMX against benzylpenicillin (PCG)-insensitive S. pneumoniae (PISP) and PCG-resistant S. pneumoniae (PRSP) were stronger than those of ampicillin (ABPC), and these strong activities suggested that CMX might have strong antimicrobial activities against beta-lactamase producing H. influenzae and M. (B.) catarrhalis. 2. Antimicrobial activities of CMX against microaerophiles, Streptococcus constellatus, Streptococcus intermedius and Gemella morbillorum and against Peptostreptococcus spp., from chronic sinusitis and odontogenic maxillary sinusitis, were stronger than those of most of the control drugs. 3. The MIC90's of CMX against isolates from patients of sinusitis were < or = 0.025-0.39 micrograms/ml. These values were lower than transitional concentrations in mucous membrane of maxillary sinus obtained when "1% CMX nasal solution" was used with nebulizer. It appears likely that sufficient concentrations exceeding MICs against main organisms would be obtained by nebulizer treatment using CMX nasal solution.

York M.K. et al. *Characterization of antimicrobial resistance in Streptococcus pyogenes isolates from the San Francisco Bay area of northern California.* J Clin Microbiol. 1999; 37(6) : 1727-31.p Abstract: During 1994 and 1995, 157 isolates of Streptococcus pyogenes from patients with invasive disease were consecutively collected in the San Francisco Bay area to determine the frequency of antimicrobial resistance. Susceptibility testing was performed according to the guidelines of the National Committee for Clinical Laboratory Standards by the disk method and by broth microdilution. For comparison of susceptibility patterns, an additional 149 strains were randomly collected from patients with pharyngitis. For San Francisco County, 32% of the isolates from invasive-disease-related specimens but only 9% of the isolates from throat cultures from the same period were resistant to erythromycin (P = 0.0007). Alameda County and Contra Costa County had rates of resistance of </=10% from isolates from all cultures. When the data were analyzed by hospital, the San Francisco County Hospital had a statistically higher rate of erythromycin resistance (39%) among the strains from serious infections compared to those from other counties (P = <0. 0003). For tetracycline, high rates of resistance were observed in San Francisco County for both isolates from patients with invasive disease (34%) and pharyngitis (21%) in the same period. Using pulsed-field gel electrophoresis, two clones, one at the San Francisco County Hospital and a second in the entire area, were identified. The latter clone exhibited resistance to bacitracin. Of 146 strains that were tested by microdilution, all were susceptible to penicillin. Clindamycin resistance was not seen among the erythromycin-susceptible strains, but two of the 39 erythromycin-resistant strains were also resistant to clindamycin. An additional 34 strains showed resistance to clindamycin when exposed to an erythromycin disk in the double-disk diffusion test, suggesting that the mechanism of erythromycin resistance is due to an erm gene. This study demonstrates a high rate of resistance to macrolides and tetracycline among S. pyogenes isolates in San Francisco County and shows that macrolide resistance is more common in strains from patients with invasive disease than in strains from those with pharyngitis.

Yoshida J. et al. *Computerized antibiogram for methicillin-resistant Staphylococcus aureus in chest surgery.* Jpn J Thorac Cardiovasc Surg. 1999; 47(8) : 368-76.p Abstract: BACKGROUND: An increasing number of cases of postoperative morbidity involving methicillin-resistant Staphylococcus aureus have been reported in thoracic surgery. To prevent its outbreak, cluster analysis using a personal computer was employed. METHODS: A total of 120 patients undergoing operations on the lung and mediastinum were included into this study. Materials were isolates of methicillin-resistant Staphylococcus aureus newly recovered from across the hospital. The cluster analysis used antimicrobial susceptibility in 12 drugs, which were categorically valued to produce Euclidean distance to form clusters of similarity. RESULTS: Six of the 120 patients were found to be positive for the microbe before or after thoracotomy. A total of two patients (1.7%) became symptomatic postoperatively, i.e., one of four preoperatively-positive patients and one of two postoperatively-positive cases. The analysis suggested that preoperative patients shared the strains in the same nonsurgical ward. DISCUSSION: A computerized antibiogram does not always strictly type Staphylococcal strains but has advantages in typing with ease and at decreased cost. The current analysis suggested that patient harboring the strains migrated across wards. CONCLUSION: Computerized antibiograms for Staphylococcal strains may assist to prevent an outbreak of their infection in chest surgery.

Yoshida R. et al. *Genetic analysis of serotype 23F Streptococcus pneumoniae isolates from several countries by penicillin-binding protein gene fingerprinting and pulsed-field gel electrophoresis.* Chemotherapy. 1999; 45(3) : 158-65.p Abstract: We characterized 21 strains of serotype 23F Streptococcus pneumoniae isolated in various countries with various levels of penicillin susceptibility by penicillin-binding protein (PBP) gene fingerprinting and pulsed-field gel electrophoresis (PFGE). Pneumococci isolated in Israel, Hungary, Bulgaria, Slovakia, Rumania, France, the United States, Spain and Japan were included. These strains were classified into 12 and 18 groups by PBP gene fingerprinting and PFGE, respectively. Some of the pneumococci isolated in Spain, the United States and France appeared to be genetically related by PFGE, showed the same PBP gene pattern and had similar antimicrobial susceptibility patterns. One penicillin-susceptible Bulgarian strain, with a similar PFGE pattern but a different fingerprinting pattern, may be an ancestral recipient strain that became transformed into the resistant variants. Rumanian and Israeli strains were also genetically related by PFGE. These results indicate the existence of widely spread but related pneumococci in the world. PBP 2X gene profiles of pneumococci with MICs of 0.25 microg/ml were different from each other and from penicillin-susceptible pneumococci (PSP). PBP 2B gene profiles of these resistant strains were identical. PBP 2B gene profiles of pneumococci (penicillin MICs >/=0.5 microg/ml) were different from PSP. PBP gene profiles may not only be useful for genetic analysis but also for presumed penicillin susceptibility.

Yoshida R. et al. *Trends in antimicrobial resistance of Streptococcus pneumoniae in Japan.* Antimicrob Agents Chemother. 1995; 39(5) : 1196-8.p Abstract: A total of 184 isolates of Streptococcus pneumoniae were recovered from the sputa of patients over a 5-year period in the Nagasaki area and were examined. A total of 30 strains were resistant to penicillin (MIC, > or = 0.10 micrograms/ml), 13 of which belonged to serotype 19B. These strains showed decreased susceptibility to other antimicrobial agents. Vancomycin, cefpirome, and imipenem were the most active agents tested.

Yoshimura K. et al. *[A case of bacillary dysentery caused by new quinolone-resistant Shigella flexneri 2a].* Kansenshogaku Zasshi. 1998; 72(9) :

935-8.p Abstract: A 73-year-old male was admitted to our hospital because of detection of Shigella flexneri 2a from his stool. Antimicrobial treatment with levofloxacin (LVFX) was started, but could not eliminate the organism in the stool. In the examination of drug susceptibility, this strain was highly resistant to all new quinolones. The minimal inhibitory concentration of norfloxacin, ofloxacin and ciprofloxacin to this strain was 12.5 micrograms/ml, 6.25 micrograms/ml and 6.25 micrograms/ml, respectively. The dual mutations were detected in the codon 83 and 87 of the gyrA gene by sequencing the quinolone-resistance determining region (QRDR). There was, however, no significant difference between the intracellular uptake of ciprofloxacin in this strain and in the ciprofloxacin-sensitive strain. The amount of ciprofloxacin in this strain unchanged when carbonyl cyanide m-chlorophenyl hydrazone (CCCP) was added. These results suggest that the advanced resistance in Shigella flexneri against new quinolones could be acquired by only this dual mutations without the change of the active efflux mechanism.

Yoshimura M. et al. *Antimicrobial effects of phototherapy and photochemotherapy in vivo and in vitro.* Br J Dermatol. 1996; 135(4) : 528-32.p Abstract: We investigated the antimicrobial effects of phototherapy and photochemotherapy in vivo and in vitro. First, Staphylococcus aureus samples were obtained using stamp agar medium from inflammatory lesions of 29 adult patients with atopic dermatitis before and after a single photochemotherapy. Therapy was oral PUVA (30 mg 8-methoxypsoralen, 8MOP plus 5J/cm2 UVA), topical PUVA (0.3% 8MOP plus 200 mJ/cm2 UVA) or UVB (80 mJ/cm2) irradiation. The number of S. aureus on the lesions was significantly reduced, even after a single treatment with all therapies. Reductions (mean +/- SD) were 69.3 +/- 26.9%, 76.3 +/- 31.3% and 83.8 +/- 18.5%, respectively. Secondly, we investigated the effect of PUVA (0.001% 8MOP plus 10, 20, 30, 40, or 50 mJ/cm2 UVA) and UVB (10, 30, 50, or 100 mJ/cm2) irradiation on the proliferation of S. aureus in vitro. PUVA and UVB treatment markedly inhibited the proliferation in a dose-dependent manner. These results seem to indicate the possibility that the antimicrobial effect of UV radiation contributes to successful photochemotherapy in patients with atopic dermatitis.

Younes Z. et al. *New Developments and Concepts in Antimicrobial Therapy for Intra-abdominal Infections.* Curr Gastroenterol Rep. 2000; 2(4) : 277-282.p Abstract: Antimicrobial therapy plays an integral role in the management of intra-abdominal infections. Recent developments include increased prevalence of antimicrobial resistance (eg, Streptococcus pneumoniae and Enterococcus species) coupled with general decline in the antimicrobial susceptibility of anaerobes and gram-negative organisms, new antibiotics and dosing regimens, and better understanding of the role of various microbial pathogens and of prophylactic antimicrobial agents. Therapeutic approaches to intra-abdominal infections, such as the various forms of peritonitis, cholecystitis, cholangitis, and diverticulitis, are reviewed here. Specific recommendations for antimicrobial therapy in various clinical settings are provided, with special emphasis on recent trends and developments that reflect changes in understanding or therapy.

Young L.S. *Treatment and prophylaxis of Mycobacterium avium complex*. Int J STD AIDS. 1996; 7 Suppl 1 : 23-7.p Abstract: The most common pathogens involved in disseminated bacterial infection in people with acquired immunodeficiency syndrome (AIDS) are organisms of the Mycobacterium avium-intracellulare complex (MAC). Azithromycin and clarithromycin, a new azalide and macrolide, respectively, are among the most potent monotherapies for MAC bacteraemia, Although many bloodstream isolates demonstrate increased minimum inhibitory concentrations after 4 months of treatment. Current recommended prophylaxis, based on the results of two randomized, double-blind, prospective studies, is rifabutin 300 mg daily for people with AIDS with < 100 CD4 lymphocytes/mm3. In the beige mouse model, we have shown that both azithromycin and clarithromycin prevent MAC bacteraemia following repetitive oral challenge. Clinical trails are now underway to confirm these effects in man; comparative treatments include placebo, rifabutin and an azalide/macrolide plus rifabutin. While combinations might be more effective and reduce the emergence of resistance, the spectre of cytochrome P-450 drug interactions necessitates careful study before combination prophylactic approaches are accepted. Such interactions are associated with rifabutin and some macrolides, although azithromycin may be less problematic in this respect as it appears to have little potential to interact with other antimicrobial agents.

Yousuf M. et al. *Meningococcal infection among pilgrims visiting Madinah Al-Munawarah despite prior A-C vaccination*. JPMA J Pak Med Assoc. 2000; 50(6) : 184-6.p Abstract: OBJECTIVE: To study the profile of meningococcal infection among pilgrims despite prior A-C vaccination. SETTING: King Abdul Aziz Hospital, Madinah Al-Munawarah, Saudi Arabia. SUBJECTS AND METHODS: Fifteen patients admitted to the hospital during the study period of April 1992 to June 1993 were evaluated prospectively regarding their clinical and laboratory features, culture and antibiotic sensitivity and meningococcal serotypes. RESULTS: Twelve cases presented as meningitis while 3 cases had meningococcaemia. Most (53.3%) were from Pakistan while rest were from 6 other countries. Clinical and laboratory features at presentation were similar as reported in the literature. In 13 cases where serotyping could be done, most belonged to group A (54%) and C (23%). Antimicrobial sensitivity showed the isolates to be sensitive to most of the antibiotics commonly used to treat this infection. Mortality was 33% with the poorest outcome in patients with W135 infection. CONCLUSION: This study underscores the need of further studies in Makkah and Madinah, Saudi Arabia to find out the serotypes and immunological factors responsible for meningococcal infection in A-C vaccinated pilgrims so as to explore the possibility of use of polyvalent meningococcal vaccine.

Yu W.L. et al. *Serratia marcescens bacteremia: clinical features and antimicrobial susceptibilities of the isolates.* J Microbiol Immunol Infect. 1998; 31(3) : 171-9.p Abstract: From July 1996 to June 1997, 22 adult patients with Serratia marcescens bacteremia were retrospectively studied at China Medical College Hospital. All patients had severe underlying disease, most commonly diabetes mellitus. Eighteen (82%) patients had nosocomial infection. Clinical syndromes included primary bacteremia (68%), pneumonia (14%), urinary tract infection (9%), suppurative thrombophlebitis (5%) and surgical wound infection (5%). Twelve patients had central venous catheters in place at the onset of bacteremia, but only one case met the definition of catheter-related infection. In 14 (64%) patients, portal of entry of S. marcescens infection was unknown. Five (23%) patients had concurrent polymicrobial bacteremia. The overall mortality rate was 50% (11/22). Seven (32%) of the 22 patients died of S. marcescens bacteremia. All isolates were resistant to ampicillin and cephalothin and susceptible to imipenem. Ninety-five percent of strains were susceptible to moxalactam, 68% to amikacin, 55% to ceftazidime, 45% to aztreonam, 32% to ceftriaxone, 27% to gentamicin, 18% to cefoperazone and cefotaxime, and 9% to piperacillin. MICs of various antibiotics demonstrated that ciprofloxacin and imipenem had good activities against S. marcescens, with MIC90 of 0.19 microg/mL and 1.0 microg/mL, respectively. Due to increasing multidrug resistance, choosing appropriate antimicrobial agents such as moxalactam, imipenem, and ciprofloxacin should be highly recommended for the treatment of S. marcescens infections.

Yunge M. et al. *Angiotensin for septic shock unresponsive to noradrenaline.* Arch Dis Child. 2000; 82(5) : 388-9.p Abstract: Two children with severe septic shock are reported. One had meningococcal septicaemia and the other Escherichia coli septicaemia. They remained hypotensive despite high concentrations of conventional inotropes and vasopressors. In one child, using a pulmonary artery catheter,

extended haemodynamic variables were measured. To restore blood pressure, in both cases, an infusion of angiotensin II was used; there was significant improvement in clinical status, resulting in a rapid reduction in the concentration of inotropes required. Both patients successfully survived their septic episodes. Angiotensin II in cases of severe refractory septic hypotension in the paediatric population offers an extra therapeutic manoeuvre.

Yurdakok M. *Antibiotic use in neonatal sepsis.* Turk J Pediatr. 1998; 40(1) : 17-33.p Abstract: Neonatal sepsis is a life-threatening emergency and any delay in treatment may cause death. Initial signs of neonatal sepsis are slight and nonspecific. Therefore, in suspected sepsis, two or three days empirical antibiotic therapy should begin immediately after cultures have been obtained without awaiting the results. Antibiotics should be reevaluated when the results of the cultures and susceptibility tests are available. If the cultures are negative and the clinical findings are well, antibiotics should be stopped. Because of the nonspecific nature of neonatal sepsis, especially in small preterm infants, physicians continue antibiotics once started. If a baby has pneumonia or what appears to be sepsis, antibiotics should not be stopped, although cultures are negative. The duration of therapy depends on the initial response to the appropriate antibiotics but should be 10 to 14 days in most infants with sepsis and minimal or absent focal infection. In infants who developed sepsis during the first week of life, empirical therapy must cover group B streptococci, Enterobacteriaceae (especially E. coli) and Listeria monocytogenes. Penicillin or ampicillin plus an aminoglycoside is usually effective against all these organisms. Initial empirical antibiotic therapy for infants who developed sepsis beyond the first days of life must cover the organisms associated with early-onset sepsis as well as hospital-acquired pathogens such as staphylococci, enterococci and Pseudomonas aeruginosa. Penicillin or ampicillin and an aminoglycoside combination may also be used in the initial therapy of late-onset sepsis as in cases with early-onset sepsis. In nosocomial infections, netilmicin or amikacin should be preferred. In cases showing increased risk of staphylococcal infection (e.g. presence of vascular catheter) or Pseudomonas infection (e.g. presence of typical skin lesions), anti-staphylococcal or anti-Pseudomonas agents may be preferred in the initial empirical therapy. In some centers, third-generation cephalosporins in combinations with penicillin or ampicillin have been used in the initial therapy of early-onset and late-onset neonatal sepsis. Third-generation cephalosporin may also be combined with an aminoglycoside in places where aminoglycoside-resistance to this antibiotic is high. However, third-generation cephalosporins should not be used in the initial therapy of suspected sepsis, because 1) extensive use of cephalosporins for initial therapy of neonatal sepsis may lead to the emergence of drug-resistant microorganisms (this has occurred more rapidly as compared with the aminoglycosides), 2) Antagonistic interactions have been demonstrated when the other beta-lactam antibiotics (e.g. penicillins) were combined with cephalosporins. Infections due to gram-negative bacilli can be treated with the combination of a penicillin-derivative (ampicillin or extended-spectrum penicillins) and an aminoglycoside. Third-generation cephalosporins in combination with an aminoglycoside or an extended-spectrum penicillin have been used in the treatment of sepsis due to these organisms. Piperacillin and azlocillin are the most active of extended-spectrum penicillins against Pseudomonas aeruginosa. Among the third-generation cephalosporins, cefoperazone and ceftazidime possess anti-Pseudomonas activity. Ceftazidime was found to be more active in vitro against Pseudomonas than cefoperazone or piperacillin. New antibiotics for gram-negative bacteria resistant to other agents are carbapenems, aztreonam, quinolones and isepamicin. Enterococci can be treated with a cell wall-active agent (e.g. penicillin, ampicillin, or vancomycin) and an aminoglycoside. Staphylococci are susceptible to penicillinase-resistant penicillins (e.g. oxacillin, nafcillin and methicillin). Resistant strains are uniformly sensitive to vancomycin. A penicillin or vancomycin and an aminoglycoside combination result in a more rapid bacteriocidal effect than is produced by either dr.

Yzerman E.P. et al. *Efficacy and safety of teicoplanin plus rifampicin in the treatment of bacteraemic infections caused by Staphylococcus aureus.* J Antimicrob Chemother. 1998; 42(2) : 233-9.p Abstract: An open study was carried out on 16 patients with hospital-acquired, bacteraemic Staphylococcus aureus infections to evaluate the safety and efficacy of teicoplanin plus rifampicin. Patients received teicoplanin 400 mg bd for the first 24 h followed by 400 mg od thereafter, and rifampicin 600 mg bd. Both agents were given intravenously. Serum samples were collected to determine trough and peak antibiotic concentrations. The MIC of teicoplanin and rifampicin and the MBC of teicoplanin were determined for all S. aureus isolates. Time-kill curves were performed for the drugs individually and in combination. Clinical efficacy was assessed by the APACHE II scoring system. Bacteriological success was evaluated by elimination, persistence or recurrence of S. aureus. Safety was carefully monitored by regular biochemical and haematological testing and recording of adverse events. Fifteen patients were evaluable, of whom 13 (86.7%) were clinically cured with elimination of S. aureus. One patient died, but death was not attributed to the study drugs. Treatment failed in another patient who relapsed with a high fever. S. aureus was recovered from blood cultures from this patient, and resistance to rifampicin had developed. Time-kill curves all showed adequate killing of S. aureus at the drug concentrations measured in vivo. Neither synergy nor antagonism between teicoplanin and rifampicin was demonstrated. The combination of teicoplanin and rifampicin is an effective and well-tolerated treatment for bacteraemic S. aureus infections, but in deep-seated foci of infection resistance to rifampicin may develop.

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Zaidi A.K. et al. *Controlled comparison of bioMerieux VITAL and BACTEC NR-660 systems for detection of bacteremia and fungemia in pediatric patients.* J Clin Microbiol. 1997; 35(8) : 2007-12.p Abstract: The bioMerieux VITAL automated blood culture system measures a decrease in fluorescence to detect the presence of microorganisms in blood. To assess the performance of VITAL with AER aerobic medium versus that of the nonradiometric BACTEC NR-660 PEDS PLUS medium for the detection of sepsis in children, a total of 12,146 blood specimens were collected at three university medical centers and inoculated into AER and PEDS PLUS bottles that were weighed before and after filling. The sample volumes were considered adequate in 6,276 bottle pairs. The total yield of isolates was 629, of which 489 (78%) were judged to be the cause of true infections. Staphylococci ($P < 0.001$) and yeasts ($P < 0.05$) were detected more often in PEDS PLUS bottles, as were all microorganisms combined ($P < 0.001$). The improved detection in the PEDS PLUS medium was most marked for patients on antimicrobial therapy ($P < 0.001$), but remained statistically significant even for patients not on therapy ($P < 0.025$). There were 431 episodes of sepsis, including 407 considered adequate for analysis. Of the 363 unimicrobial episodes, 278 were detected by both bottles, 64 were detected by PEDS PLUS bottles only, and 21 were detected by AER bottles only ($P < 0.01$). No false-negative cultures were detected by terminal subculture of the PEDS PLUS bottles when the companion AER bottle was positive. However, there were 14 false-negative cultures (7 yeasts, 5 staphylococci, 1 Enterococcus faecalis, and 1 Enterobacter sp.) on terminal subculture of the AER bottles when the companion PEDS PLUS bottle was positive. When both systems were positive, the VITAL system detected bacteria earlier than did the BACTEC system by a mean of 1.6 h. Also, false-positive signals were less common with the VITAL system. We conclude that the VITAL system with AER medium must be modified to improve the detection of clinically important staphylococci and yeasts if it is to perform comparably to the BACTEC NR-660 nonradiometric system with PEDS PLUS medium for a pediatric population.

Zambon J.J. et al. *The microbiology and histopathology of human root caries.* Am J Dent. 1995; 8(6) : 323-8.p Abstract: Based on numerous microbiological studies performed over the past several decades, it is clear that mutans streptococci can cause human root caries. S. mutans fulfills the criteria for implicating bacteria in the etiology of a mixed infection. For example, S. mutans is found in high numbers in lesion sites, higher than on sound root surfaces in the same subject. Subjects make elevated antibody levels to S. mutans antigens. The organism produces a number of virulence factors including metabolic acid from dietary sucrose and extracellular polysaccharides which facilitate bacterial colonization of tooth surfaces. Eliminating or reducing the number of S. mutans reduces the number of root caries lesions and can even result in "healing" of incipient lesions. There is also data demonstrating the cariogenic potential of S. mutans in animal models. Clearly, S. mutans fulfills the aforementioned requirements. Further, there is also evidence to implicate Lactobacillus as being important in the pathogenesis of root caries by virtue of its association with S. mutans in these lesions. There is less recent evidence regarding the importance of Actinomyces in this disease. While this microorganism is present in root caries and while animal studies clearly point to their cariogenic potential, more recent studies with few exceptions fail to find much association between Actinomyces and root caries. There is an important caveat, however. The Actinomyces may have subspecies groups which are more highly virulent and more closely involved in the etiology of root caries than other groups. For example, A. viscosus serovar 2 is associated with root caries. This and other subspecies groups may produce certain virulence factors not found within Actinomyces species as a whole. For this group of microorganisms and for other potential pathogens, techniques in molecular biology such as 16S ribosomal RNA sequencing offers the hope of more precisely defining species and unraveling what may be largely problems in bacterial taxonomy. Ribosomal RNA sequencing may reveal taxonomic relationships not apparent with classical phenotypic or serologic analyses. Other molecular methods, such as DNA or RNA probes to specific virulence factors may also reveal relationships between clinical lesions and microorganisms possessing these virulence factors. Finally, there are clearly a number of additional species which may have importance in root surface caries as shown in some studies. These techniques can be used to identify the distribution of novel, even uncultivable bacteria in root caries lesions and in this way establish their role in this important disease.

Zambrano D. *Recent advances in antibiotic regimens for the treatment of obstetric-gynecologic infections.* Clin Ther. 1996; 18(2) : 214-27; discussion 213.p Abstract: This paper reviews new information on antimicrobial agents for the treatment of obstetric-gynecologic infections. The bacteriology of these infections is complex, reflecting the bacteria that usually colonize the vagina and cervix. In general, these infections are polymicrobial in nature: the most frequently isolated microorganisms are gram-negative facultative aerobes, anaerobes, Chlamydia trachomatis, and Neisseria gonorrhoeae. Antibiotic regimens that do provide coverage of these pathogens showed unacceptably high failure rates. A review of the studies recently published confirmed the recommendations of the US Centers for Disease Control and Prevention for severe (inpatients) and mild-to-moderate (outpatients) pelvic inflammatory disease infections. In the case of severe infections, two regimens are recommended: a second-generation cephalosporin like cefoxitin or cefotetan, plus doxycycline or clindamycin/gentamicin. In the case of mild-to-moderate infection, a second- or third-generation cephalosporin plus doxycycline, or oral clindamycin plus an oral quinolone are recommended. Such studies produce high bacteriologic and clinical success rates. New studies indicate that gentamicin may be replaced with a monobactam such as aztreonam; this regimen leads to slightly better efficacy and less toxicity. The possibility of using clindamycin and a quinolone antibiotic is also discussed.

Zamora-Navas P. et al. *Closed suction drainage after knee arthroplasty. A prospective study of the effectiveness of the operation and of bacterial contamination.* Acta Orthop Belg. 1999; 65(1) : 44-7.p Abstract: A prospective investigation was designed to determine the volume and the evolution of bleeding after closure of the surgical wound following knee arthroplasty, as well as the incidence of infection and bacterial contamination in relation with the time that the suction drain was left in place. The drain was removed either 12, 24 or 48 hours after the operation. The presence of any signs of clinical infection was recorded. The tip of the drain, 1 cm of its subcutaneous portion and a sample from the collecting bottle were studied for bacterial contamination. In the 12-hr group, no microorganisms were isolated in cultures either from the tip, the subcutaneous portion or the bottle of the drain. In the 24-hr group, 87% of the total postoperative bleeding was collected during the first 12 hours. In two cases, the samples obtained from the tip and the subcutaneous portion of the drain were positive for Staphylococcus epidermidis. In the 48-hr group, 91% and 97% of the total bleeding volume was collected during the first 12 and 24 hours, respectively. In two cases, St. epidermidis was isolated in cultures from the subcutaneous portion of the drain. The clinical evaluation of wound healing was comparable in all three groups.

Zani F. et al. *Antimicrobial activity of some 1,2-benzisothiazoles having a benzenesulfonamide moiety.* Arch Pharm (Weinheim). 1998; 331(6) : 219-23.p Abstract: Some sulfonamide and sulfonylurea derivatives of unsubstituted and 5-methylsubstituted 1,2-benzisothiazole were studied in vitro for their antimicrobial properties against bacteria and fungi. Compounds 7 and 8 exhibited good antibacterial activity against Gram positive bacteria. A strong synergism was observed when their growth-inhibitory effect was assayed in combination with trimethoprim by using Bacillus subtilis and Staphylococcus aureus as test microorganisms. The antimycotic action of benzenesulfonylurea derivative 9 was very marked for Madurella mycetomatis and dermatophytes Epidermophyton floccosum, Microsporum gypseum and Trichophyton spp.. Structure-activity relations are discussed.

Zarantonelli L. et al. *Decreased azithromycin susceptibility of Neisseria gonorrhoeae due to mtrR mutations.* Antimicrob Agents Chemother. 1999; 43(10) : 2468-72.p Abstract: Single-dose azithromycin therapy has recently been used in Uruguay for the treatment of uncomplicated gonococcal infections. As part of an active surveillance study to monitor the emergence of antibiotic resistance in gonococcal isolates, we examined the levels of azithromycin susceptibility in 51 consecutive isolates obtained from males with uncomplicated gonococcal urethritis. Isolates with decreased susceptibility to azithromycin (MICs, 0.25 to 0.5 microg/ml) were common, and these isolates often displayed cross-resistance to hydrophobic antimicrobial agents (erythromycin and Triton X-100). Resistance to erythromycin and Triton X-100 is frequently due to overexpression of the mtrCDE-encoded efflux pump mediated by mutations in the mtrR gene, which encodes a transcriptional repressor that modulates expression of the mtrCDE operon. Accordingly, we questioned whether clinical isolates that express decreased azithromycin susceptibility harbor mtrR mutations. Promoter mutations that would decrease the level of expression of mtrR as well as a missense mutation at codon 45 in the mtrR-coding region that would result in a radical amino acid replacement within the DNA-binding motif of MtrR were found in these strains. When these mutations were transferred into azithromycin-susceptible strain FA19 by transformation, the susceptibility of gonococci to azithromycin was decreased by nearly 10-fold. The mtrCDE-encoded efflux pump system was responsible for this property since insertional inactivation of the mtrC gene resulted in enhanced susceptibility of gonococci to azithromycin. We conclude that the mtrCDE-encoded efflux pump can recognize azithromycin and that the emergence of gonococcal strains with decreased susceptibility to azithromycin can, in part, be explained by mtrR mutations.

Zbinden R. *[Decreased penicillin sensitivity of pneumococci].* Ther Umsch. 1998; 55(1) : 18-21.p Abstract: The mechanism of penicillin-resistance of Streptococcus pneumoniae involves the development of altered forms of penicillin-binding proteins (PBPs) that have a decreased affinity for penicillin. PBPs are involved in the assembly of the cell wall. Normal forms of PBPs are inhibited by penicillin but altered forms are not. It appears that the altered PBP genes arose by interspecies recombinational events in which segments of the PBPs structural genes had been replaced by regions derived from PBP genes of oral streptococcal species. Altered PBP genes of penicillin-resistant pneumococci can be spread horizontally to sensitive pneumococci by transformation. Highly resistant pneumococci have several altered PBPs and also show resistance to the third-generation cephalosporins and other antibiotics. Some clones of resistant pneumococci seem to have an increased epidemic potential to spread. In Austria, Germany, Italy, and Switzerland approximately 95% of pneumococci are still penicillin-sensitive. However, an increase of the highly resistant pneumococci would change the empirical therapy of severe pneumococcal infections in the near future. Reasonable use of antimicrobials might reduce the selective antimicrobial pressure and the spread of penicillin-resistant strains.

Zeckel M.L. *A closer look at vancomycin, teicoplanin, and antimicrobial resistance.* J Chemother. 1997; 9(5) : 311-31; discussion 332-5.p Abstract: The worldwide increase in the incidence of resistant Gram-positive infections has renewed interest in the glycopeptide class of antimicrobial agents. Two glycopeptides are available in many parts of the world—vancomycin and teicoplanin. These two agents appear to differ in several respects, including: potential for selecting microbial resistance, dosing convenience, safety, and efficacy in severe infection. Teicoplanin appears to have lower toxicity and greater convenience; however, its widespread acceptance has been plagued by concerns over antimicrobial resistance, efficacy, and appropriate dosing. A review of available studies suggests that teicoplanin, when dosed at 6 mg/kg/day, is better tolerated than vancomycin 15 mg/kg/q12h; however, at these doses, it appears to be somewhat less effective than vancomycin in serious Staphylococcus aureus infection, such as endocarditis. Although higher doses of teicoplanin, 12 mg/kg/day to 30 mg/kg/day, have been associated with efficacy comparable to that of vancomycin in serious S. aureus infections, such doses may eliminate some of the safety advantages conferred by lower teicoplanin doses. Teicoplanin has been associated with resistance among coagulase-negative staphylococci and the selection of resistance in S. aureus. There is some evidence that widespread use of teicoplanin might accelerate the development of S. aureus resistance to both teicoplanin and vancomycin. The selection of an appropriate glycopeptide in an individual patient should be based not only on convenience, but also on a determination of optimal efficacy, safety at an efficacious dose, and the potential for resistance.

Zemack G. et al. *Seven years of clinical experience with the programmable Codman Hakim valve: a retrospective study of 583 patients.* J Neurosurg. 2000; 92(6) : 941-8.p Abstract: OBJECT: The goal of this study was to assess the value of the Codman Hakim programmable valve to settings in the range of 30 to 200 mm H2O. This valve can be adjusted noninvasively for cerebrospinal fluid (CSF) drainage. METHODS: The authors conducted a single-center retrospective study of 583 patients (421 adults and 162 children) suffering from hydrocephalus of various causes (379 patients), normal-pressure hydrocephalus (174 patients), arachnoid cyst (14 patients), and pseudotumor cerebri (16 patients). In all cases a Codman Hakim programmable valve was implanted; in 82.8% of cases it was included during the patient's first shunt implantation. In 42.4% of the cases valve pressure adjustment was required at least once (mean number of adjustments 1.2, maximum 23). The patients' clinical status improved after 64.6% of pressure adjustments. Accidental resetting of opening pressure, other than that caused by magnetic resonance (MR) imaging, was uncommon. Because MR imaging caused resetting in 26.8% of cases in which it was used, it was deemed mandatory to obtain an x-ray film after MR imaging. Valve malfunction, blockage, or adjustment difficulties occurred in 2% of valves implanted, and nontraumatic subdural fluid collections were demonstrated in 5.1% of patients (13 of whom were treated by valve pressure adjustment alone). Five-year shunt survival was 53.1% for first-time shunt implantations. The shunt infection rate was 8.5% of valve implantations. Catheter-related complications and shunt-related infections were the main reasons for surgical revision and the major cause of shunt failure. At follow-up review, 97% of children and 90% of adults had improved. CONCLUSIONS: Because one cannot know in advance which case will turn out to be complicated, the authors' preference is to use the Codman Hakim programmable valve for all conditions in which CSF should be drained.

Zembrzuska-Sadkowska E. *The danger of infections of the hospitalized patients with the microorganisms present in preparations and in the hospital environment.* Acta Pol Pharm. 1995; 52(2) : 173-8.p Abstract: Two strains-S. aureus and coagulase-negative staphylococcus, resistant to antibiotics, were isolated from previously non-opened preparations made by the hospital pharmacy and industrially produced. After application in the surgery ward, two Enterobacter agglomerans strains, resistant to antibiotics were detected in oral mixtures. The resistant bacteria, B. cereus and 4 strains of Ps. aeruginosa, were also found in the purified water. In hospital environment 9 strains of staphylococci, resistant to the tested antibiotics were found. Only one of them was S. aureus (detected on the wall), the others being coagulase-negative staphylococci. Most of them were isolated from the floor, but also from the wall, table and from the air in surgical and ophthalmological wards and in the hospital pharmacy. The most dangerous were three Gram-negative strains resistant to all tested antibiotics. They were isolated from the floor (Enterobacter cloacae), from the wall (Proteus mirabilis) and from the container with oral mixture in infant ward (Ps. malthophilia). Many strains resistant to many antibiotics were detected on the floor of surgical, nephrological and infantile wards as well as from the pharmacies: Enterobacter cloacae (7 strains), Citrobacter freundi, Ps. aeruginosa, Ps. cepacia (2 strains), Ps. maltophilia (2 strains) and Moraxella. Many resistant strains were also present on the walls (E. coli, Ps. mirabilis, Ps. cepacia, Alcaligens, Acinetobacter). The resistant strains were rarely observed on the table, medical equipment and on personnel hands. Klebsiella oxytoca and Ps. paucimobilis were found on the table, Ps. maltophilia on the dropper and on the rim of the container with oral mixture. Acinetobacter and Pseudomonas sp. were isolated from the medicine glass, Enterobacter cloacae and Pseudomonas sp. from the personnel hands in the pharmacies.

Zenker M. et al. *Paravertebral and intraspinal malposition of transfemoral central venous catheters in newborns.* J Pediatr. 2000; 136(6) : 837-40.p Abstract: We report permanent tetraplegia in a newborn resulting from intraspinal malposition of a transfemoral catheter. In 2 other neonates paravertebral malposition of indwelling Silastic lines was detected. We suggest that left-sided transfemoral catheterization and conditions enhancing collateral flow through the vertebrolumbar pathway may predispose to inadvertent paravertebral catheter placement.

Zervos M. *Vancomycin-resistant Enterococcus faecium infections in the ICU and quinupristin/dalfopristin.* New Horiz. 1996; 4(3) : 385-92.p Abstract: The incidence of vancomycin resistance among enterococci, and Enterococcus faecium in particular, has increased sharply in the last few years. This shift toward infection with resistant Gram-positive organisms is thought to be the consequence of certain features specific to the intensive care setting: a high concentration of severely compromised patients; continued use of indwelling devices and invasive procedures; and widespread, empiric use of antimicrobial agents directed against Gram-negative bacilli. Measures that can be taken to prevent the development of bacterial resistance in the ICU include strict adherence to infection control policies and asepsis, and rational use of antibiotics. Current antimicrobial regimens for

serious enterococcal infections consist of a combination of ampicillin, penicillin G, or vancomycin plus streptomycin or gentamicin. High levels of resistances among some enterococcal isolates, however, may render these strategies ineffective. A new agent, quinupristin/dalfopristin (RP 59500), has demonstrated encouraging in vitro activity against vancomycin-resistant E. faecium. Initial clinical reports, though limited, are similarly promising. Although phase III clinical trials with RP 59500 are not completed, the agent is available through an emergency-use program for patients with severe Gram-positive infections who cannot tolerate or do not respond to all other clinically appropriate antibiotics.

Zhanel G.G. et al. *Prevalence of antimicrobial resistance in respiratory tract isolates of Streptococcus pneumoniae: results of a Canadian national surveillance study. The Canadian Respiratory Infection Study Group.* Antimicrob Agents Chemother. 1999; 43(10) : 2504-9.p Abstract: From October 1997 to November 1998, 1,180 respiratory tract isolates of Streptococcus pneumoniae were collected from 18 medical centers in 9 of the 10 Canadian provinces. Penicillin-intermediate and -resistant isolates occurred at rates of 14.8 and 6.4%, respectively, and these rates varied considerably by geographic region. Trimethoprim-sulfamethoxazole, tetracycline, and macrolide rates of nonsusceptibility were 12.2, 10.6, and 8.0 to 9.3%, respectively. The most potent agents studied were newer fluoroquinolones.

Zhang F. et al. *[Trends and changes in antimicrobial resistance of clinical isolates from 11 hospitals in Beijing area].* Chung Hua I Hsueh Tsa Chih. 1997; 77(5) : 327-31.p Abstract: OBJECTIVE: To study the antimicrobial resistance and its changes of clinical isolates in Beijing area. METHODS: The diameters of the inhibition zones of clinical isolates around antibiotic susceptibility test discs at 12 hospitals in Beijing area were computerfiled and analysed by the software of 'WHONET' according to NCCLS published in 1994. RESULTS: A total of 10,305 isolates were collected in 1995. The percentages of resistance were as follows: (1) in E. coli: amikacin, 8%, ceftazidime, 15%, the other third generation cephalosporins, about 30%, (2) in Klebsiella spp: ofloxacin, 0%, ceftazidime, 15%, ciprofloxacin, 17%, norfloxacin, 15%, ofloxacin, 5%, (4) in Staph. aureus: norvancomycin, 0%, (5) in Strep. pneumoniae: penicillin G, 9%, (6) in Enterococcus spp: norvancomycin, 7%. The antimicrobial resistant changes over a six year period from 1990 to 1995 were surveyed and it was found that resistant percentage of the most isolates to quinolones, for example norfloxacin, increased significantly year by year and no remarkable differences of resistance to antimicrobial agents but quinolones were observed in Ps. aeruginosa. CONCLUSION: Antimicrobial resistance should be emphasised during clinical therapy with antimicrobial agents, and trends in antimicrobial resistance of isolates should be followed.

Zhao P. et al. *Development of a model for evaluation of microbial cross-contamination in the kitchen*. J Food Prot. 1998; 61(8) : 960-3.p Abstract: Foods can become contaminated with pathogenic microorganisms from hands, the cutting board, and knives during preparation in the kitchen. A laboratory model was developed to determine occurrence of cross-contamination and efficacy of decontamination procedures in kitchen food-handling practices. Enterobacter aerogenes B199A, an indicator bacterium with attachment characteristics similar to that of Salmonella spp., was used. Chicken meat with skin inoculated with 10(6) CFU of E. aerogenes B199A/g was cut into small pieces on a sterile cutting board. The extent of cross-contamination occurring from meat to the cutting board and from the cutting board to vegetables (lettuce and cucumbers) subsequently cut on the board was determined. Swab samples from the cutting board, hand washings, and lettuce and cucumber samples revealed that approximately 10(5) CFU of E. aerogenes/cm2 were transferred to the board and hands and approximately 10(3) to 10(4) CFU of E. aerogenes/g to the lettuce and cucumbers. The surfaces of the cutting board and hands were treated with antibacterial agents after cutting the meat, and counts of E. aerogenes on the cutting board and vegetables (lettuce and cucumbers) were determined. Results revealed that use of the disinfectant reduced the population of E. aerogenes to almost nondetectable levels on the cutting boards. The average counts after treatment were < 20 CFU/g of vegetable and ranged from < 20 to 200 CFU per cm2 or g on the cutting board and subsequently on the vegetables. These results indicate that bacteria with attachment characteristics similar to Salmonella spp. can be readily transferred to cutting boards during food preparation and then cross-contaminate fresh vegetables if the boards are not cleaned. Application of a kitchen disinfectant can greatly reduce bacterial contamination on cutting boards.

Zhilenkov E.L. et al. *[Examining interaction of phages with microorganisms by fluorometry and electro-orientation spectroscopy].* Vestn Ross Akad Med Nauk. 1999; (12) : 24-9.p Abstract: Bacterial sensitivity to different various phages was examined by electro-orientation spectroscopy, fluorometry, and electron microscopy. The strains of Pseudomonas aeruginosa, Staphylococcus aureus, Yersinia pestis, Mycobacterium smegmatis, and Xanthomonas campestris were used. The fluorescence intensity of a membranotropic agent in the ANS-cell-phage system was shown to depend on the interaction of a bacterial virus and a microorganism. Fluorometric data correlated with electro-orientation spectroscopic findings. An analysis of the low-frequency site makes it possible to determine phage adsorption on the bacterial surface. The changes in electro-orientation effects at high frequencies suggest that there are barrier dysfunctions in the external membranes and that there is cellular phage reproductions. Whether fluorometry and electro-orientation spectroscopy can be further used for rapid identification of microorganisms by using phages is discussed.

Ziha-Zarifi I. et al. *In vivo emergence of multidrug-resistant mutants of Pseudomonas aeruginosa overexpressing the active efflux system MexA-MexB-OprM.* Antimicrob Agents Chemother. 1999; 43(2) : 287-91.p Abstract: During a 6-month period, 21 pairs of Pseudomonas aeruginosa isolates susceptible (pretherapy) and resistant (posttherapy) to antipseudomonal beta-lactam antibiotics were isolated from hospitalized patients. In vivo emergence of beta-lactam resistance was associated with the overexpression of AmpC beta-lactamase in 10 patients. In the other 11 patients, the posttherapy isolates produced only low, basal levels of beta-lactamase and had increased levels of resistance to a variety of non-beta-lactam antibiotics (e.g., quinolones, tetracyclines, and trimethoprim) compared with the levels of beta-lactamase production and resistance of their pretherapy counterparts. These data suggested the involvement of the MexA-MexB-OprM active efflux system in the multidrug resistance phenotype of the posttherapy strains. Immunoblotting of the outer membrane proteins of these 11 bacterial pairs with a specific polyclonal antibody raised against OprM demonstrated the overexpression of OprM in all the posttherapy isolates. To determine whether mutations in mexR, the regulator gene of the mexA-mexB-oprM efflux operon, could account for the overproduction of the efflux system, sequencing experiments were carried out with the 11 bacterial pairs. Eight posttherapy isolates were found to contain insertions or deletions that led to frameshifts in the coding sequences of mexR. Two resistant strains had point mutations in mexR that yielded single amino acid changes in the protein MexR, while another strain did not show any mutation in mexR or in the promoter region upstream of mexR. Introduction of a plasmid-encoded wild-type mexR gene into five posttherapy isolates partially restored the susceptibility of the bacteria to selected antibiotics. These results indicate that in the course of antimicrobial therapy multidrug-resistant active efflux mutants overexpressing the MexA-MexB-OprM system may emerge as a result of mutations in the mexR gene.

Zimmermann B. 3rd et al. *Septic bursitis.* Semin Arthritis Rheum. 1995; 24(6) : 391-410.p Abstract: Nine cases of septic bursitis are presented, and the literature on the subject comprehensively reviewed, with an emphasis on the clinical manifestations of septic bursitis in various

anatomic locations. Physical activities associated with increased susceptibility to septic bursitis and systemic conditions that increase the severity of septic bursitis are catalogued. Analysis of the microbiology of cases reported in the literature demonstrates that greater than 80% of cases of septic bursitis are caused by Staphylococcus aureus and other gram-positive organisms. However, a wide variety of gram-negative microorganisms, fungi, and other infectious agents have been reported to cause septic bursitis and may lead to complications in diagnosis and treatment. The nine cases reported here demonstrate the potential severity of septic bursitis and emphasize that significant systemic complications may result from this common musculoskeletal infection. Indications for hospitalization and/or intravenous antibiotic therapy for septic bursitis include the presence of fulminant local infection, evidence for systemic toxicity, or infection in an immunocompromised patient. Patients who fail to respond to intravenous antibiotics and percutaneous aspiration of the bursa may require surgical drainage or bursectomy by one of several methods that have been proposed. There is some recent evidence that intrabursal corticosteroid injection for therapy of nonseptic subcutaneous bursitis may be more effective than systemic antiinflammatory medication or simple bursa aspiration.

Ziuzio S. et al. *[Bacterial flora in chronic purulent maxillary sinusitis].* Otolaryngol Pol. 1997; 51 Suppl 25 : 179-83.p Abstract: In the years from 1993 till 1995 there were 132 tests done on occurrence aerobes (oxygen bacteria) and 56 tests on occurrence of anaerobes and fungus in patients with chronic sinusitis. The most common microorganisms among the aerobes was Haemophilus influenzae (23.1%) and Staphylococcus aureus (20.9%). The most common microorganisms among the anaerobes was Peptococcus and Peptostreptococcus (together 57.1%) and from the strains Bacteroides (36.8). The breeded oxygen microorganisms Gr(+) were mostly sensible to clindamycin, cefuroxim and augmentin; Gr(-) organisms to amicacin, gentamycin and cefuroxim. Anaerobes were mostly sensible to metronidazole and clindamycin.

Zuckerman J.M. *The newer macrolides: azithromycin and clarithromycin.* Infect Dis Clin North Am. 2000; 14(2) : 449-62, x.p Abstract: Azithromycin and clarithromycin are two relatively new macrolide antimicrobial agents. Although azithromycin and clarithromycin are structural analogues of erythromycin, they offer distinct advantages in comparison. This article reviews the pharmacokinetics, antimicrobial activity, clinical use, and adverse affects of these antimicrobial agents.

Zurenko G.E. et al. *In vitro activities of U-100592 and U-100766, novel oxazolidinone antibacterial agents.* Antimicrob Agents Chemother. 1996; 40(4) : 839-45.p Abstract: Oxazolidinones make up a relatively new class of antimicrobial agents which possess a unique mechanism of bacterial protein synthesis inhibition. U-100592 (S)-N-[[3-[3-fluoro-4-[4-(hydroxyacetyl)-1-piperazinyl]- phenyl]-2-oxo-5-oxazolidinyl]methyl]-acetamide and U-100766 (S)-N-[[3-[3-fluoro-4-(4-morpholinyl)phenyl]- 2-oxo-5-oxazolidinyl]methyl]-acetamide are novel oxazolidinone analogs from a directed chemical modification program. MICs were determined for a variety of bacterial clinical isolates; the respective MICs of U-100592 and U-100766 at which 90% of isolates are inhibited were as follows: methicillin-susceptible Staphylococcus aureus, 4 and 4 micrograms/ml; methicillin-resistant S. aureus, 4 and 4 micrograms/ml; methicillin-susceptible Staphylococcus epidermidis, 2 and 2 micrograms/ml; methicillin-resistant S. epidermidis, 1 and 2 micrograms/ml; Enterococcus faecalis, 2 and 4 micrograms/ml; Enterococcus faecium, 2 and 4 micrograms/ml; Streptococcus pyogenes, 1 and 2 micrograms/ml; Streptococcus pneumoniae, 0.50 and 1 microgram/ml; Corynebacterium spp., 0.50 and 0.50 micrograms/ml; Moraxella catarrhalis, 4 and 4 micrograms/ml; Listeria monocytogenes, 8 and 2 micrograms/ml; and Bacteroides fragilis, 16 and 4 micrograms/ml. Most strains of Mycobacterium tuberculosis and the gram-positive anaerobes were inhibited in the range of 0.50 to 2 micrograms/ml. Enterococcal strains resistant to vancomycin (VanA, VanB, and VanC resistance phenotypes), pneumococcal strains resistant to penicillin, and M. tuberculosis strains resistant to common antitubercular agents (isoniazid, streptomycin, rifampin, ethionamide, and ethambutol) were not cross-resistant to the oxazolidinones. The presence of 10, 20, and 40% pooled human serum did not affect the antibacterial activities of the oxazolidinones. Time-kill studies demonstrated a bacteriostatic effect of the analogs against staphylococci and enterococci but a bactericidal effect against streptococci. The spontaneous mutation frequencies of S. aureus ATCC 29213 were <3.8 x 10(-10) and <8 x 10(-11) for U-100592 and U-100766, respectively. Serial transfer of three staphylococcal and two enterococcal strains on drug gradient plates produced no evidence of rapid resistance development. Thus, these new oxazolidinone analogs demonstrated in vitro antibacterial activities against a variety of clinically important human pathogens.

Zurowska A. et al. *[Ultrasound of exit-site and tunnel infections in children on peritoneal dialysis].* Pol Merkuriusz Lek. 2000; 8(46) : 297-8.p Abstract: Ultrasound diagnosis of catheter related infections in patients on peritoneal dialysis is easy to perform diagnostic procedure which enables more precise diagnosis and better follow-up of therapy. The authors present three cases of exit site and tunnel infections in children, illustrating the value of ultrasound evaluation in their diagnosis and in decisions on conservative treatment or catheter removal.

Zwolska Z. et al. *[A Polish multicenter survey of antimicrobial susceptibility and prevalence of beta-lactamase production among bacterial pathogens isolated from hospitalized and ambulatory patients].* Pol Merkuriusz Lek. 1998; 4(23) : 241-6.p Abstract: The aim of the study was to establish the frequency of occurrence of bacterial pathogens with beta-lactamase activity, and pattern of resistance among aerobic and anaerobic strains isolated from: respiratory tract, urinary tract, skin and soft tissues (hospitalized patients) and throat swabs (ambulatory patients). The study was conducted in 1994 year in 6 bacteriological laboratories in four Polish towns (Warszawa, Krakow, Katowice, Gdansk) according to the protocol. Sensitivity of bacteria was tested by the disc method on the Mueller-Hinton agar or chocolate agar according to NCCLS, activity of beta-lactamase was tested with nitrocephin. A total 2038 clinical strains—1869 aerobic and 169 anaerobic was well-defined and tested for susceptibility to ten antibiotics—amoxicilin, augmentin, ofloxacin, gentamycin, cefradin, erythromycin, cefuroxim, kotrimoxazol, cefalexin and cefaclor. Among the isolated aerobes Staphylococcus aureus (25.1%), E. coli (23.2%) and Haemophilus influenzae (14.0%) were most frequent, and in the group of anaerobes the most frequent were Bacteroides spp (40.8%) We have found 45.8% of all tested aerobic strains with beta-lactamase production, the highest proportion in pathogens isolated from respiratory tract—51.4%, 46.6% from urinary tract, and 48.4% from skin and soft tissues. Among the isolated anaerobic—68.8% of Bacteroides and 28.6% others produced beta-lactamase. Forty percentage of all strains were sensitive to amoxicilin, 70-90% of aerobic bacteria were sensitive to augmentin. Augmentin had a high activity against anaerobic bacteria too. Only a small proportion of the tested aerobic bacteria (12.2%) were resistant to ofloxacin, gentamycin showed a sufficient activity against tested strains (24.4% were resistant). The most frequent pathogen—Staphylococcus aureus was resistant to amoxicilin in 83.1% hospitalized patients, and in 73.9% in ambulatory patients.