OPS/HCP/HCT/187/01

Antimicrobial Resistance Bibliography

Pan American Health Organization
Pan American Sanitary Bureau, Regional Office of the
World Health Organization

Division of Disease Prevention and Control
Communicable Diseases Program

525 Twenty-third Street, N.W.
Washington, D.C. 20037, U.S.A.
www.paho.org

PAHO Lybrary Cataloguing in Publication Data

Pan American Health Organization
Antimicrobial resistance bibliography
Washington, D.C.: PAHO, © 2001.
x, 769p.—(OPS/HCP/HCT/187/01)

ISBN 92 75 07385 6

I. Title II. Series
1. MICROBIAL DRUG RESISTANCE
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NLM QV52.P187 2001

ISBN 92 75 07385 6

ABOUT THE CONTENTS

This bibliography on Antimicrobial Resistance covers all information found in MEDLINE and LILACS databases. It includes documentation from the period of 1995-2000, in both English and Spanish. The Medical Subject Headings (MeSH) was the main thesaurus used in this bibliography. The main term, Antimicrobial resistance, was combined with other headings (MeSH and those selected by a group of specialists for this bibliography. See Table of Contents). Time limits were set from 1995 to 1999 as a final filter for the search. The bibliography itself was divided in four main categories, each one containing a series of interrelated subterms. The results of each search were reviewed and separated into the different subjects selected. If the article was written in a language other than English, the translated title will appear surrounded by brackets [ ], with English language abstracts. The results of the search were then downloaded into ProCite Reference Manager software (Version 5) using the import text file mode. As a result, a searchable database was created. The database was then searched by keyword to generate the Subject Section (sorted alphabetically, first by title and then by author); and the Author Section was generated and sorted by author and then by title. A special output format was built in ProCite, to create the printed citations for the Author and Subject Sections, respectively.

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PREFACE

In the 1980s the Pan American Health Organization (PAHO) began to take action to combat antimicrobial resistance with a survey on the activities carried out in the countries of the Americas to monitor the evolution of the problem. This led to improvements in the infrastructure of the laboratories working in this field, and training for their human resources. In 1995, given the growing problem of emerging and reemerging diseases in the Region, including resistance to antibiotics, and the new mandates from its Governing Bodies, PAHO intensified its efforts in this area. Prior to this time, the Organization had already supported the creation of a surveillance system to monitor antimicrobial susceptibility in isolates of *Streptococcus pneumoniae* collected from invasive disease, pneumonia, and meningitis in children under 5 years of age. Originally, 70 hospitals from 30 cities and 6 countries (Argentina, Brazil, Colombia, Chile, Mexico, and Uruguay) participated in the network, with financial support from the Canadian International Development Agency. The surveillance system has now been expanded to other countries and is currently monitoring resistance in isolates of *Haemophilus influenzae* and *Neisseria meningitidis.*

In 1996, another surveillance network was established to monitor the antimicrobial susceptibility of *Salmonella* spp. and *Shigella* spp., as well as *Vibrio cholerae,* important etiologic agents of diarrhea that sometimes require treatment with antibiotics. In the beginning, this network was comprised of the reference laboratories of Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico, Peru, and Venezuela. In order to ensure reliable results, a system for internal quality control was established in each laboratory, and another system was set up for periodic external performance evaluation. Canada's Laboratory Center for Disease Control served as the coordinating and referral laboratory. The laboratories of five Caribbean countries subsequently joined this network.

In late 1999, six new Latin American countries also joined the network: Bolivia, Cuba, Ecuador, El Salvador, Nicaragua, and Paraguay. With support from the U.S. Agency for International Development, five of these countries expanded their antimicrobial monitoring activities to include other bacterial agents present in both the community and at sentinel hospitals. A new coordinating laboratory was added to the system, Argentina's National Administration for Laboratories and Health Institutes, which was responsible for evaluating the performance of monitoring activities in regard to surveillance of resistance among bacteria other than *Salmonella* spp., *Shigella* spp., and *Vibrio cholerae* in the five aforementioned countries.

The goal and results of these surveillance activities will serve as the basis for national actions to prevent or contain antimicrobial resistance. It will, therefore, be necessary to obtain information on current policies and practices in the countries; analyze and disseminate that information to expose the risk posed by the emergence of resistance and its economic impact; search for partners in the different sectors to promote successful preventive practices; and take steps to facilitate the rational use of antibiotics.

Some of the results of the activities described in preceding paragraphs have already been published in the *Pan American Journal of Infectious Diseases* (Volume 3, Supplement 1 May 1999), a publication of the Pan American Association of Infectious Diseases. They were also published in a collection of articles by various authors from the Region under the title *Antimicrobial Resistance in the Americas:*

Magnitude and Containment of the Problem (PAHO/HCP/HCT/163/2000, in print) and an accompanying pamphlet that contains the results of the surveillance of *Salmonella spp., Shigella spp.,* and *Vibrio cholerae* (PAHO/HCP/HCT/163/2000–supplement).

The activities of the Organization in this field have not been isolated. PAHO has had considerable collaboration from other institutions interested in the problem of antimicrobial resistance, among them the Pan American Association for Infectious Diseases, the Alliance for the Prudent Use of Antibiotics, Canada's National Laboratory for Enteric Pathogens of Canada, Argentina's National Institute for Infectious Diseases, and the American Society for Microbiology. It has also received financial support from the U.S. Agency for International Development.

Above all, we have benefited from the collaboration of a great number of professionals from the countries of the Region, affiliated with microbiology laboratories and clinical facilities alike (pediatricians, infectious disease specialists, and others), who have compiled and shared information with their colleagues from other countries and the Organization in order to disseminate it more widely. It was in such working environment that the need to present the published material on antimicrobial resistance in a more practical fashion was detected; hence, the origin of this bibliography.

With this volume on articles published between 1995 and 2000, with their respective abstracts, we hope to put a vast and valuable store of information within the reach of our collaborators and other professionals in the Region. Our purpose is to provide material that may assist them in their daily activities and serve as a guide and support to promote measures for the containment of antimicrobial resistance.

Renato d'A. Gusmão, M.D., M.P.H., ScD.
Coordinator
Communicable Diseases Program

ACKNOWLEDGEMENTS

This publication would not have been possible without the contributions of Dr. Liliana Clara, Infectious Disease Specialist, Hospital Italiano, Buenos Aires, Argentina, and Dr. Lucia Texeira, Professor of Microbiology, Microbiology Institute, Federal University of Rio de Janeiro, Brazil, who provided technical and conceptual advice for this project. Dr. Yehuda Benguigui, Ms. Roxane Salvatierra-González and Dr. Gabriel Schmunis, of the PAHO's Communicable Diseases Program, coordinated the project. The computerize data search and editing was the responsibility of BIBASI, S.A.

The United States Agency for International Development provided the financial resources for the publication.

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AUTHOR SECTION

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Aarestrup F.M. et al. *Comparison of antimicrobial resistance phenotypes and resistance genes in Enterococcus faecalis and Enterococcus faecium from humans in the community, broilers, and pigs in Denmark*. Diagn Microbiol Infect Dis. 2000; 37(2) : 127-37.p Abstract: Enterococcus faecalis and E. faecium isolated from humans in the community (98 and 65 isolates), broilers (126 and 122), and pigs (102 and 88) during 1998 were tested for susceptibility to 12 different antimicrobial agents and for the presence of selected genes encoding resistance using PCR. Furthermore, the presence of vancomycin resistant enterococci was examined in 38 human stool samples using selective enrichment. Widespread resistance to chloramphenicol, macrolides, kanamycin, streptomycin, and tetracycline was found among isolates from all three sources. All E. faecium isolates from humans and pigs were susceptible to avilamycin, whereas 35% of isolates from broilers were resistant. All E. faecium isolates from humans were susceptible to vancomycin, whereas 10% and 17% of isolates from broilers and pigs, respectively, were resistant. A vancomycin resistant E. faecium isolate was found in one of the 38 human fecal samples examined using selective enrichment. All vancomycin resistant isolates contained the vanA gene, all chloramphenicol resistant isolates the cat(pIP501) gene, and all five gentamicin resistant isolates the aac6-aph2 gene. Sixty-one (85%) of 72 erythromycin resistant E. faecalis examined and 57 (90%) of 63 erythromycin resistant E. faecium isolates examined contained ermB. Forty (91%) of the kanamycin resistant E. faecalis and 18 (72%) of the kanamycin resistant E. faecium isolates contained aphA3. The tet(M) gene was found in 95% of the tetracycline resistant E. faecalis and E. faecium isolates of human and animal origin, examined. tet(K) was not observed, whereas tet(L) was detected in 17% of tetracycline resistant E. faecalis isolates and in 16% of the E. faecium isolates. tet(O) was not detected in any of the isolates from pigs, but was observed in 38% of E. faecalis isolates from broilers, in two E. faecalis isolates from humans and in three E. faecium isolates from broilers. tet(S) was not detected among isolates from animals, but was observed in 31% of E. faecalis and one E. faecium isolate from humans. This study showed a frequent occurrence of antimicrobial resistance and the presence of selected resistance genes in E. faecalis and E. faecium isolated from humans, broilers and pigs. Differences in the occurrence of resistance and tetracycline resistance genes were observed among isolates from the different sources. However, similar resistance patterns and resistance genes were detected frequently indicating that transmission of resistant enterococci or resistance genes takes place between humans, broilers, and pigs.

Aarestrup F.M. et al. *Antimicrobial susceptibility patterns of thermophilic Campylobacter spp. from humans, pigs, cattle, and broilers in Denmark*. Antimicrob Agents Chemother. 1997; 41(10) : 2244-50.p Abstract: The MICs of 16 antimicrobial agents were determined for 202 Campylobacter jejuni isolates, 123 Campylobacter coli isolates, and 6 Campylobacter lari isolates from humans and food animals in Denmark. The C. jejuni isolates originated from humans (75), broilers (95), cattle (29), and pigs (3); the C. coli isolates originated from humans (7), broilers (17), and pigs (99); and the C. lari isolates originated from broilers (5) and cattle (1). All isolates were susceptible to apramycin, neomycin, and gentamicin. Only a few C. jejuni isolates were resistant to one or more antimicrobial agents. Resistance to tetracycline was more common among C. jejuni isolates from humans (11%) than among C. jejuni isolates from animals (0 to 2%). More resistance to streptomycin was found among C. jejuni isolates from cattle (10%) than among those from humans (4%) or broilers (1%). A greater proportion of C. coli than of C. jejuni isolates were resistant to the other antimicrobial agents tested. Isolates were in most cases either coresistant to tylosin, spiramycin, and erythromycin or susceptible to all three antibiotics. More macrolide-resistant isolates were observed among C. coli isolates from swine (79%) than among C. coli isolates from broilers (18%) and humans (14%). Twenty-four percent of C. coli isolates from pigs were resistant to enrofloxacin, whereas 29% of C. coli isolates from humans and none from broilers were resistant. More resistance to streptomycin was observed among C. coli isolates from swine (48%) than among C. coli isolates from broilers (6%) or humans (0%). The six C. lari isolates were susceptible to all antimicrobial agents except ampicillin and nalidixic acid. This study showed that antimicrobial resistance was found only at relatively low frequencies among C. jejuni and C. lari isolates. Among C. coli isolates, especially from swine, there was a high level of resistance to macrolides and streptomycin. Furthermore, this study showed differences in the resistance to antimicrobial agents among Campylobacter isolates of different origins.

Aarestrup F.M. et al. *The effects of antibiotic usage in food animals on the development of antimicrobial resistance of importance for humans in Campylobacter and Escherichia coli*. Microbes Infect. 1999; 1(8) : 639-44.p Abstract: Modern food animal production depends on use of large amounts of antibiotics for disease control. This provides favourable conditions for the spread and persistence of antimicrobial-resistant zoonotic bacteria such as Campylobacter and E. coli O157. The occurrence of antimicrobial resistance to antimicrobials used in human therapy is increasing in human pathogenic Campylobacter and E. coli from animals. There is an urgent need to implement strategies for prudent use of antibiotics in food animal production to prevent further increases in the occurrence of antimicrobial resistance in food-borne human pathogenic bacteria such as Campylobacter and E. coli.

Abadi F.J. et al. *Antimicrobial susceptibility of penicillin-sensitive and penicillin-resistant meningococci*. J Antimicrob Chemother. 1995; 35(5) : 687-90.p Abstract: Ceftriaxone showed high in-vitro activity against 119 penicillin-sensitive, penicillin-resistant and rifampicin-resistant UK isolates of meningococci. Unlike ciprofloxacin and minocycline, ceftriaxone is suitable for use in young children or in pregnancy and should be considered for therapy or prophylaxis in an outbreak of meningococcal disease. The E test gave results comparable to those given by broth microdilution method in the determination of meningococcal susceptibility to antimicrobials. It is convenient for use in small laboratories and can be used to determine antimicrobial subgroups of meningococci.

Abaev I.u.K. et al. *[The dynamics of the antiseptic resistance of the causative agents of soft-tissue suppurative-inflammatory diseases in children]*. Vestn Khir Im I I Grek. 1996; 155(4) : 35-7.p Abstract: Opening of purulent foci in children with pyo-inflammatory diseases (PID) of soft tissues often leads to detection of staphylococcus aureus in the monoculture and different associations of this microbe with gram-negative bacteria in amounts exceeding the "critical level" responsible for the development of PID. Repeated examinations revealed a 2 times decreased frequency of detection of staphylococcus monocultures and 1.5 time less diversity of the association of microorganisms. Most efficient antiseptics among the investigated ones in relation to bacteria isolated in the opened purulent foci were found to be iodopyron, pervomur, boric acid, resorcinum, dioxidine.

Abbas J. et al. *Candida krusei fungemia. An escalating serious infection in immunocompromised patients.* Arch Intern Med. 2000; 160(17) : 2659-64.p Abstract: BACKGROUND: Candida krusei is inherently resistant to fluconazole and is emerging as a frequent cause of fungemia in patients with hematologic malignant neoplasms. OBJECTIVE: To determine the risk and prognostic factors associated with C krusei fungemia in comparison with Candida albicans fungemia in patients with cancer. METHODS: Retrospective study of 57 cases of C krusei fungemia occurring at the M. D. Anderson Cancer Center, Houston, Tex, from 1989 to 1996. The C krusei cases were compared with 57 cases of C albicans fungemia with respect to demographics, underlying cancer, Acute Physiology and Chronic Health Evaluation II score, immunosuppression status, chemothera-

py, and the use of central venous catheters, as well as fluconazole prophylaxis. RESULTS: At our institution, C krusei accounted for 5% of fungemias during 1989 through 1992 and for 10% during 1993 through 1996. Patients with C krusei fungemia more often had leukemia than patients with C albicans (77% vs 11%; P =.02), whereas catheter-related infections were more common among patients with C albicans fungemia (42% vs 0%; P<.001). Patients with C krusei fungemia had a lower response rate (51% vs 69%; P =.05), largely because they more frequently were neutropenic and had disseminated infection. Mortality related to fungemia was 49% in the cases with C krusei vs 28% in C albicans. Multiple logistic regression analysis showed that persistent neutropenia (P =.02) and septic shock (P =.002) were predictors of poor prognosis. CONCLUSION: In neutropenic patients, C krusei fungemia is associated with high mortality. It should be suspected in patients with leukemia who are receiving fluconazole prophylaxis and should be treated aggressively with an amphotericin B regimen.

Abdel-Rahman E.M. et al. *Antibiotic resistance and prevalence of beta-lactamase in Haemophilus influenzae isolates-a surveillance study of patients with respiratory infection in Saudi Arabia.* Diagn Microbiol Infect Dis. 2000; 36(3) : 203-8.p Abstract: Haemophilus influenzae was isolated from patients with respiratory tract infections in five centers in Saudi Arabia. All of the 129 isolates tested by MIC agar dilution were fully susceptible to ceftazidime and ciprofloxacin but 13.2% were resistant to ampicillin, 7% to tetracycline, 5.4% to chloramphenicol, 3.9% to roxithromycin, and 1.6% to amoxicillin/clavulanic acid. Seventeen (13.2%) of all isolates produced TEM-1 type beta-lactamase, the majority (82%) characterized as biotype I or II with 4 (23.5%) encapsulated and belonging to serotype b. There was a clear distinction between the prevalence of beta-lactamase production in hospital patients (26.3% of 19 isolates) compared with community based patients (10.9% of 110 isolates). In addition, we report an increase in the prevalence of beta-lactamase negative, ampicillin intermediate strains (BLNAI) compared to previous studies in this defined geographical region. Changes in the frequency and nature of antimicrobial resistance in common respiratory pathogens confirms the need to maintain surveillance.

Abee T. et al. *Bacteriocins: modes of action and potentials in food preservation and control of food poisoning.* Int J Food Microbiol. 1995; 28(2) : 169-85.p Abstract: Lactic acid bacteria (LAB) play an essential role in the majority of food fermentations, and a wide variety of strains are routinely employed as starter cultures in the manufacture of dairy, meat, vegetable and bakery products. One of the most important contributions of these microorganisms is the extended shelf life of the fermented product by comparison to that of the raw substrate. Growth of spoilage and pathogenic bacteria in these foods is inhibited due to competition for nutrients and the presence of starter-derived inhibitors such as lactic acid, hydrogen peroxide and bacteriocins (Ray and Daeschel, 1992). Bacteriocins, are a heterogenous group of anti-bacterial proteins that vary in spectrum of activity, mode of action, molecular weight, genetic origin and biochemical properties. Currently, artificial chemical preservatives are employed to limit the number of microorganisms capable of growing within foods, but increasing consumer awareness of potential health risks associated with some of these substances has led researchers to examine the possibility of using bacteriocins produced by LAB as biopreservatives. The major classes of bacteriocins produced by LAB include: (I) lantibiotics, (II) small heat stable peptides, (III) large heat labile proteins, and (IV) complex proteins whose activity requires the association of carbohydrate or lipid moieties (Klaenhammer, 1993). Significantly however, the inhibitory activity of these substances is confined to Gram-positive bacteria and inhibition of Gram-negatives by these bacteriocins has not been demonstrated, an observation which can be explained by a detailed analysis and comparison of the composition of Gram-positive and Gram-negative bacterial cell walls (Fig. 1). In both types the cytoplasmic membrane which forms the border between the cytoplasm and the external environment, is surrounded by a layer of peptidoglycan which is significantly thinner in Gram-negative bacteria than in Gram-positive bacteria. Gram-negative bacteria possess an additional layer, the so-called outer membrane which is composed of phospholipids, proteins and lipopolysaccharides (LPS), and this membrane is impermeable to most molecules. Nevertheless, the presence of porins in this layer will allow the free diffusion of molecules with a molecular mass below 600 Da. The smallest bacteriocins produced by lactic acid bacteria are approximately 3 kDa and are thus too large to reach their target, the cytoplasmic membrane (Klaenhammer, 1993; Stiles and Hastings, 1991). However, Stevens et al. (1991) and Ray (1993) have demonstrated that Salmonella species and other Gram-negative bacteria become sensitive to nisin after exposure to treatments that change the permeability barrier properties of the outer membrane (see below). This review will focus on the mode of action of lantibiotics (class I) and class II LAB bacteriocins and their potentials in food preservation and control of food poisoning.

Abid A. et al. *[Peripheral infected aneurysm: report of 15 cases].* Tunis Med. 2000; 78(1) : 37-46.p Abstract: In this retrospective study we report 15 cases of peripheral infected aneurysms. The sex ratio was 13/2 and the mean age was 23 years. Patients presented with infection syndrome in 9 cases, vascular mass in 11 cases and limb ischemia in 2 instances. Arterial lesion was documented and confirmed by echography, tomodensitometry and angiography. The infection was recognised by different criteria the main one being micro-organism isolation. In 10 cases aneurysm was secondary to bacterial endocarditis, in 4 it was primary and in one case it was related to arterial catheter procedure. Treatment is based on antibiotics and surgical management by removing of infected aneurysm and arterial restoration whenever possible. Arterial flowerest re-establishment was done in 10 patients among whom 6 by anatomic procedures 4 by extra-anatomic ones. Hospital mortality rate was 13% (2/15), all deaths occurred after cardiac surgery for endocarditis. Two patients were readmitted for adjacent spine infection, one month and one and a half respectively after surgery. One young patient required late surgery (aorto-bifemoral bypass) 24 months after initial treatment and one patient died by intra-duodenal rupture of recurrent false aneurysm. Analysis of our results and literature review allow discussion of clinical, physiopathological and specially therapeutic aspects of infected aneurysm.

Abou-Rass M. et al. *Microorganisms in closed periapical lesions.* Int Endod J. 1998; 31(1) : 39-47.p Abstract: The purpose of this study was to investigate the microorganisms of strictly selected closed periapical lesions associated with both refractory endodontic therapy and pulpal calcification. Definitive criteria were established that assured complete clinical isolation of the periapical lesion from the oral and periodontal environment. A total of 13 criteria-referenced lesions were selected from 70 patients with endodontic surgical indications. A well controlled culturing method was used in all cases and samples were taken by one clinician at three separate sites during each surgery. Samples taken at the surgical window and within the body of the lesion served as controls, whilst a third sample was taken at the apex. In all 13 cases, samples taken from the apex yielded microorganisms comprising 63.6% obligate anaerobes and 36.4% facultative anaerobes. Prevalence of the isolated species was 31.8% for Actinomyces sp., 22.7% Propionibacterium sp., 18.2% Streptococcus sp., 13.6% Staphlyococcus sp., 4.6% Porphyromonas gingivalis, 4.6% Peptostreptococcus micros and 4.6% Gram-negative enterics. The results of this investigation indicate that closed periapical lesions associated with calcified teeth or those resistant to root canal treatment harbour bacteria. The inability to eradicate all root canal microorganisms during root canal treatment, along with anatomical factors, may allow further bacterial colonization of the root apex and surrounding periapical tissues, and consequently prevent healing.

Abulrahi H.A. et al. *Plasmodium falciparum malaria transmitted in hospital through heparin locks.* Lancet. 1997; 349(9044) : 23-5.p Abstract:

BACKGROUND: After a community investigation had implicated hospital admission as a shared feature of a cluster of acute Plasmodium falciparum malaria (AFM) cases in Riyadh, Saudi Arabia, we began an in-hospital investigation to determine the method of transmission. METHODS: We investigated all AFM patients admitted to one paediatric hospital for any reason from December, 1991, to April, 1992. We classified AFM as locally acquired (LAFM) if during the month before AFM onset the patient had not visited a malarious area, and as hospital acquired (HAFM) if the LAFM patient had been admitted to hospital during that month. We compared exposures of HAFM cases with those of other patients sampled from the same wards. We observed nursing practices and investigated by anonymous questionnaire how nurses administered parenteral drugs. FINDINGS: Of 21 LAFM cases, 20 (95%) had a previous hospital admission (exposure admission) compared with 15 (25%) of 61 other patients ($p < 0.001$; chi 2 test). During the exposure admission, all HAFM patients had occupied the same room as, or a room adjacent to, an AFM patient; 14 (23%) of 60 other patients occupied the same room or rooms adjacent to an AFM patient ($p < 0.001$, chi 2). 90% of HAFM patients received infusions through a heparin lock during the exposure admission, compared with 49% of 120 general patients ($p < 0.001$, chi 2). 10% of nurses admitted to using one syringe for more than one heparin lock and 50% filled syringes with enough heparin for three to ten heparin locks. INTERPRETATION: P falciparum was transmitted between patients when single syringes were used on heparin locks of sequential patients. This practice would easily transmit other blood-borne agents.

Acar J.F. et al. *Consequences of increasing resistance to antimicrobial agents.* Clin Infect Dis. 1998; 27 Suppl 1 : S125-30.p Abstract: The correlation between in vitro bacterial susceptibility results and clinical outcome has been debated for many years. Bacterial resistance traits are more significantly correlated with failure of therapy than is an organism's susceptibility to an antimicrobial agent. We review the situations that have supported the clinical relevance of in vitro bacterial resistance. Those situations include: emergence, during therapy, of a new resistance marker not known before; selection of a resistant mutant or acquisition of a resistance gene during therapy; failure to recognize or take into account a new resistance mechanism; and superinfection with resistant bacteria. More information should be obtained in the future by performing studies oriented toward bacteriologically documented clinical failures and by better communication between microbiologists and physicians to correlate the in vitro data with host status, the pharmacokinetics of the antimicrobial agent, and the bacteriologic and clinical outcome.

Achong R.A. et al. *Effect of chlorhexidine varnish mouthguards on the levels of selected oral microorganisms in pediatric patients.* Pediatr Dent. 1999; 21(3) : 169-75.p Abstract: PURPOSE: The effect of a chlorhexidine varnish delivery system on the levels of selected oral microorganisms was evaluated in caries active pediatric patients, ages 4 to 12 years old. METHODS: Forty-six patients were enrolled into the study when they had multiple carious surfaces and salivary mutans streptococci (MS) levels higher than 10(4) colony forming units (CFUs) per milliliter. This study incorporated a double-blind design and patients were randomly assigned to either the chlorhexidine treatment group or the placebo group. Complete-arch, vacuum-adapted mouthguards (0.02 in. polypropylene coping material) were custom fabricated and coated internally with either a 3.0% chlorhexidine varnish or a placebo varnish. Two pretreatment paraffin-stimulated saliva samples were obtained for culturing prior to varnish treatment. Saliva samples were also obtained immediately after treatment and once a month for up to three months after wearing the mouthguard appliances. Dental restorations were placed at most of these saliva collection visits. Mouthguards were reportedly worn for an average of 9.7 hours per night for approximately seven nights by 40 subjects (87%). RESULTS: After two months, and after three months, there was a significant reduction in MS levels immediately after the chlorhexidine varnish treatment. Total anaerobic and total facultative bacteria levels were not significantly affected. CONCLUSION: One week of nightly use of the chlorhexidine varnish mouthguard system is effective at reducing the number of MS in caries-active pediatric patients in the mixed and primary dentition for at least three months.

Ackers M.L. et al. *Laboratory-based surveillance of Salmonella serotype Typhi infections in the United States: antimicrobial resistance on the rise.* JAMA. 2000; 283(20) : 2668-73.p Abstract: CONTEXT: Multidrug-resistant Salmonella serotype Typhi infections have been reported worldwide, but data on the incidence of resistant strains in the United States are lacking. OBJECTIVES: To determine the incidence of antimicrobial-resistant Salmonella Typhi infections and to identify risk factors for infection. DESIGN: Cross-sectional laboratory-based surveillance study. SETTING AND PARTICIPANTS: A total of 293 persons with symptomatic typhoid fever who had Salmonella Typhi isolates and epidemiological information submitted to US public health departments and laboratories from June 1, 1996, to May 31, 1997. MAIN OUTCOME MEASURES: Proportion of Salmonella Typhi isolates demonstrating resistance to 12 antimicrobial agents; patient epidemiological factors associated with drug-resistant infections. RESULTS: Median age was 21 years (range, 3 months to 84 years); 56% were male. Two hundred twenty-eight (80%) were hospitalized; 2 died. In the 6 weeks before illness onset, 81% of patients had traveled abroad. Seventy-four Salmonella Typhi isolates (25%) were resistant to 1 or more antimicrobial agent, and 51 (17%) were resistant to 5 or more agents, including ampicillin, chloramphenicol, and trimethoprim-sulfamethoxazole (multidrug-resistant Salmonella Typhi [MDRST]). Although no resistance to ciprofloxacin or ceftriaxone was observed, 20 isolates (7%) were nalidixic acid-resistant (NARST). Patients with MDRST and NARST infections were more likely to report travel outside the United States, particularly to the Indian subcontinent (Bangladesh, India, and Pakistan) (odds ratio [OR], 29.3; 95% confidence interval [CI], 6.8-126.7; P<.001 and OR, 35.9; 95% CI, 3.4-377.3; P<.001, respectively). CONCLUSIONS: Our data suggest that ciprofloxacin and ceftriaxone are appropriate empirical therapy for suspected typhoid fever; however, resistance may be anticipated. Continued monitoring of antimicrobial resistance among Salmonella Typhi strains will help determine vaccination and treatment policies. JAMA. 2000;283:2668-2673.

Adair C.G. et al. *Implications of endotracheal tube biofilm for ventilator-associated pneumonia.* Intensive Care Med. 1999; 25(10) : 1072-6.p Abstract: OBJECTIVE: To determine the relationship between, and antibiotic resistance of, endotracheal tube (ET) biofilm and pulmonary pathogens in ventilator-associated pneumonia (VAP). SETTING: General intensive care units in two university teaching hospitals. DESIGN: The microbiology of ET biofilm and tracheal samples from patients with and without VAP were compared. For individual patients, matching pairs of pathogens were confirmed as identical and characterised for antibiotic susceptibility. PATIENTS: 40 intensive care unit patients - 20 with VAP, 20 without VAP as control. The duration of intubation (median and range) was 6.5 days (3-17) and 5 days (2-10), respectively. MEASUREMENTS AND RESULTS: Samples of tracheal secretions were taken during ventilation for bacteriological culture. Following extubation, ETs were examined for the presence of biofilm. Isolates of high pathogenic potential included Staphylococcus aureus, enterococci, Enterobacteriaceae, pseudomonads and Candida spp. Where the same microorganism was found on tracheal and ET samples by phenotyping, these were confirmed as identical by genotyping and characterised for antibiotic susceptibility in both the free floating and biofilm forms. Seventy per cent of patients with VAP had identical pathogens isolated from both ET biofilm and tracheal secretions. No pairing of pathogens was observed in control patients ($p < 0.005$). Susceptibility data for these pairs show that the ET acts as a reservoir for infecting microorganisms which exhibit significantly greater antibiotic resistance than their tracheal counterparts. CONCLUSION: This investigation provides further evidence for the role of ET biofilm in VAP. The difficulty in eradicating an established micro-

bial biofilm using antibiotics implies that increased attention must be directed towards modification of the ET to prevent or substantially reduce biofilm formation.

Adamsson I. et al. *Microbial ecology and treatment of Helicobacter pylori infections: review.* J Chemother. 2000; 12(1) : 5-16.p Abstract: The aims of the present study were to investigate the ecological disturbances caused by four different anti-H. pylori regimens, to compare different methods for diagnosing H. pylori, and to study the genetic variability of H. pylori. The patients included in the study were all treated at the Center of Gastroenterology, Huddinge University Hospital, Karolinska Institute. All patients were H. pylori-positive before entering the study, confirmed by rapid urease test, histology, culture and urea breath test or PCR. Treatment regimens included in the study were omeprazole alone (OP), in combination with amoxicillin (OA), in combination with amoxicillin and metronidazole (OAM) and in combination with clarithromycin and metronidazole (OCM). Samples from the mouth (saliva and dental plaque), stomach (biopsies from the gastric mucosa in the corpus and in the antrum) and the intestine (feces) were collected before, during and after treatment. The oral microflora was challenged by the three treatment regimens including antimicrobial agents, with the emergence of resistant streptococci and staphylococci in the OCM group. Bacterial strains in the gastric mucosa increased in numbers during treatment in all treatment groups, probably due to the pH rise, which provides a better environment for the commensal microflora. This overgrowth was especially pronounced during treatment with omeprazole alone (OP), possibly due to the fact that a concomitant suppression exerted by the antimicrobial agents occurred in the other treatment groups. H. pylori was, on the other hand, suppressed during treatment in all treatment groups, possibly due to a direct effect of omeprazole and to the colonization resistance expressed by the normal microflora. An emergence of resistant commensal strains in the gastric mucosa was seen in the OCM and the OAM groups. The intestinal microflora was most altered in the OAM and the OCM groups, with persistent disturbances in the OCM group 4 weeks after treatment. The frequency of resistant Enterococcus spp. (OCM), Enterobacteriaceae spp. (OA and OAM) and Bacteroides spp. (OCM) was increased during and after treatment. Different detection methods for H. pylori were compared and PCR was shown to have higher sensitivity than other routine diagnostic tests. The patients in the present study seemed to be colonized with a single strain of H. pylori. Treatment failures in patients treated with OAM were caused by recrudescence. These four patients with relapsing H. pylori infection, were shown to be reinfected with the original H. pylori strain, indicating that H. pylori escapes treatment by a thus far unknown mechanism.

Adamsson I. et al. *Comparative effects of cefadroxil and phenoxymethylpenicillin on the normal oropharyngeal and intestinal microflora.* Infection. 1997; 25(3) : 154-8.p Abstract: The ecological effects on the commensal microflora in saliva and stool samples were studied during administration of two commonly used antibiotics: cefadroxil 500 mg b.i.d. for 10 days and phenoxymethylpenicillin 1 g b.i.d. for 10 days. Twenty healthy volunteers participated in the study. In the oropharyngeal microflora the aerobic microflora was significantly suppressed during administration of cefadroxil while no significant changes were noticed in the anaerobic microflora. Administration of phenoxymethylpenicillin caused a strong decrease in the number of viridans streptococci and an overgrowth of Neisseria cocci. The total numbers of anaerobic oropharyngeal microorganisms were suppressed during phenoxymethylpenicillin administration. In the intestinal microflora the variation in numbers of aerobic and anaerobic microorganisms was minor in both groups. The microflora became normalised 2 weeks after withdrawal of the drugs. It was concluded that peroral administration of cefadroxil to healthy volunteers resulted in minor ecological disturbances in the oropharyngeal and intestinal microflora, which were in the same range as for phenoxymethylpenicillin.

Adenis J.P. et al. *Local antimicrobial prophylaxis in cataract surgery: recent controversies and clinical guidelines.* Ophthalmologica. 1997; 211 Suppl 1 : 77-80.p Abstract: The best prevention of endophthamitis is the use of strict surgical hygiene. Supplementing the irrigating solution with aminoglycosides and/or vancomycin is a rational, convenient and cost effective method of antimicrobial prophylaxis. However emerging resistance to vancomycin entails restrictions to its daily use. In conclusion, two options are possible: limit the use of prophylaxis in the irrigating solution to only those patients at high risk of injection, or use topical and general antibioprophylaxis with low cost drugs.

Adeniyi B.A. et al. *Antimicrobial potentials of Diospyros mespiliformis (Ebenaceae).* Afr J Med Med Sci. 1996; 25(3) : 221-4.p Abstract: The petroleum ether, chloroform, methanol, and water extracts of the leaves, stem bark, and root of Diospyros mespiliformis were studied for their antimicrobial activities. The crude extracts showed broad spectrum antimicrobial activities against 9 Gram-positive bacteria, 8 Gram-negative bacteria, and 6 fungal strains. Of the four extracting solvents, chloroform produced extracts with the best antimicrobial activities, while the chloroform extract of the root exhibited the highest antimicrobial activity. Some tetracycline resistant strains of Staphylococcus aureus and gentamicin resistant strains of Pseudomonas aeruginosa were sensitive to some of the extracts tested. Preliminary phytochemical screening revealed the presence of the following metabolites: anthraquinones, tannins, triterpene, saponins, steroids, and sugars and the absence of alkaloids. The antimicrobial activities observed are discussed in relation to the chemical constituents reportedly isolated from several species of this plant and their traditional uses.

Adesiyun A.A. et al. *Characteristics of Staphylococcus aureus strains isolated from clinical and non-clinical human sources in Trinidad: susceptibility to bacteriophages and antimicrobial agents, and toxigenicity.* Zentralbl Bakteriol. 1995; 282(4) : 519-32.p Abstract: The susceptibility of Staphylococcus aureus strains isolated from human clinical and non-clinical sources in Trinidad to bacteriophages and antimicrobial agents was determined. The ability of the strains to produce enterotoxins and toxic shock syndrome toxin-1 (TSST-1) was also investigated. Of the 554 strains tested, 454 (81.8%) were susceptible to international phage set (IPS) phages with strains isolated from bacteruria (57.1%) and bacteremia (53.3%) having a low sensitivity compared to isolates from aspirates (87.3%) and anterior nares (97.4%). All sources combined, strains were most susceptible to phages belonging to several groups (mixed). Overall, 419 (75.6%) strains were resistant to one or more of nine antimicrobial agents tested. Resistance to penicillin was most prevalent, with 413 (74.5%) strains found to be resistant. Prevalence of resistance to tetracycline, gentamicin, oxacillin, cefuroxime and ciprofloxacin was 5.1%, 2.0%, 0.7%, 0.4% and 0.4%, respectively. Of the 554 strains tested, 307 (55.4%) produced staphylococcal enterotoxins A (SEA), B (SEB), C (SEC) and D (SED) singly or in combination. Strains recovered from high vaginal swabs were least enterotoxigenic (40.0%) as compared to umbilical infection isolates which were most enterotoxigenic (78.9%). TSST-1 was produced by 95 (19.0%) out of 499 strains tested, with isolates from bacteruria found to be most toxigenic (33.3%). It was concluded that the S. aureus strains tested were highly susceptible to bacteriophages and antimicrobial agents (except penicillin) and that enterotoxigenic and TSST-1 producers were widespread and have an aetiologic potential.

Adhikari M. et al. *A 4-year study of neonatal meningitis: clinical and microbiological findings.* J Trop Pediatr. 1995; 41(2) : 81-5.p Abstract: The clinical and microbiological data of 60 neonates, 23 from the Neonatal Unit (Group I) and 37 (Group II) from the General Paediatric Wards with meningitis are presented. The overall prevalence/1000 was significantly lower in Group I (0.36) than in Group II (1.11; $P < 0.0001$). This low incidence follows the introduction of amikacin for the treatment of the ill neonate in 1986. Streptococcus

agalactiae 21 (35 per cent), Klebsiella pneumoniae 17 (28 per cent) and E. coli 10 (17 per cent) were the commonest pathogens accounting for 80 per cent of the cases. Streptococcus agalactiae isolates were uniformly susceptible to penicillin and chloramphenicol. Gram negative isolates showed resistance to ampicillin, chloramphenicol and sulphamethoxazole-trimethoprim. In addition K. pneumoniae isolates showed resistance to gentamycin and amikacin. All isolates were fully susceptible to cefotaxime. Recently, four of six cases of K. pneumoniae in the Neonatal Unit were resistant to amikacin. Low birth weight, additional clinical problems, and ultrasound changes on cranial scanning carried a poor prognosis. Emphasis should be placed on close collaboration between clinicians and microbiologists in the choice of antimicrobial agents and aseptic techniques for the care of neonates.

Adrian P.V. et al. *Mutations in the dihydrofolate reductase gene of trimethoprim-resistant isolates of Streptococcus pneumoniae.* Antimicrob Agents Chemother. 1997; 41(11) : 2406-13.p Abstract: Streptococcus pneumoniae isolates resistant to several antimicrobial agent classes including trimethoprim-sulfamethoxazole have been reported with increasing frequency throughout the world. The MICs of trimethoprim, sulfamethoxazole, and trimethoprim-sulfamethoxazole (1:19) for 259 clinical isolates from South Africa were determined, and 166 of these 259 (64%) isolates were resistant to trimethoprim-sulfamethoxazole (MICs > or =20 mg/liter). Trimethoprim resistance was found to be more strongly correlated with trimethoprim-sulfamethoxazole resistance (correlation coefficient, 0.744) than was sulfamethoxazole resistance (correlation coefficient, 0.441). The dihydrofolate reductase genes from 11 trimethoprim-resistant (MICs, 64 to 512 microg/ml) clinical isolates of Streptococcus pneumoniae were amplified by PCR, and the nucleotide sequences were determined. Two main groups of mutations to the dihydrofolate reductase gene were found. Both groups shared six amino acid changes (Glu20-Asp, Pro70-Ser, Gln81-His, Asp92-Ala, Ile100-Leu, and Leu135-Phe). The first group included two extra changes (Lys60-Gln and Pro111-Ser), and the second group was characterized by six additional amino acid changes (Glu14-Asp, Ile74-Leu, Gln91-His, Glu94-Asp, Phe147-Ser, and Ala149-Thr). Chromosomal DNA from resistant isolates and cloned PCR products of the genes encoding resistant dihydrofolate reductases were capable of transforming a susceptible strain of S. pneumoniae to trimethoprim resistance. The inhibitor profiles of recombinant dihydrofolate reductase from resistant and susceptible isolates revealed that the dihydrofolate reductase from trimethoprim-resistant isolates was 50-fold more resistant (50% inhibitory doses [ID50s], 3.9 to 7.3 microM) than that from susceptible strains (ID50s, 0.15 microM). Site-directed mutagenesis experiments revealed that one mutation, Ile100-Leu, resulted in a 50-fold increase in the ID50 of trimethoprim. The resistant dihydrofolate reductases were characterized by highly conserved redundant changes in the nucleotide sequence, suggesting that the genes encoding resistant dihydrofolate reductases may have evolved as a result of inter- or intraspecies recombination by transformation.

Adwan K. et al. *High incidence of penicillin resistance amongst clinical isolates of Streptococcus pneumoniae in northern Palestine.* J Med Microbiol. 1999; 48(12) : 1107-10.p Abstract: One hundred and thirteen consecutive isolates of Streptococcus pneumoniae were collected in Nablus, Palestine between March and Aug. 1997 from children with acute lower respiratory tract infections. Resistance rates were: penicillin 88%, cefuroxime 85%, erythromycin 63%, tetracycline 45%, chloramphenicol 27% and ofloxacin 2%. Resistances to erythromycin and cefuroxime were significantly associated with penicillin resistance. Ofloxacin may be useful against pneumococci resistant to traditional antimicrobial agents. Factors associated with penicillin resistance included hospitalisation and previous use of beta-lactam antibiotics.

Aggarwal S. et al. *Phrenic nerve palsy: a rare complication of indwelling subclavian vein catheter.* Pediatr Nephrol. 2000; 14(3) : 203-4.p Abstract: The use of central venous catheters as access for hemodialysis has become common in children with end-stage renal disease. Phrenic nerve palsy is an unusual complication of this procedure. We report a case of delayed right diaphragmatic palsy due to phrenic nerve damage resulting from an indwelling right subclavian catheter in a 3-year-old child.

Agodi A. et al. *Molecular characterization of trimethoprim resistance in salmonellas isolated in Sicily, 1985-1988.* Eur J Epidemiol. 1995; 11(1) : 33-8.p Abstract: The occurrence of trimethoprim (Tp) resistance in salmonellas isolated from humans and water samples in Sicily between 1985 and 1988 has been investigated and the Tp resistance mechanisms have been further characterized on the basis of hybridization with probes for the dihydrofolate reductase (DHFR) genes types I, II, IV and V. Of 765 strains examined, high level (> 1000 mg/l) resistance to Tp was identified in 23 strains (3%). In 22 of these strains, such resistance was associated with resistance to sulphonamides. Six serovars with Tp-resistant strains were identified, Salmonella typhimurium (14 strains), S. enteridis (2), S. agona (2), S. mbandaka (2), S. virchow (2), S. indiana (1). In all strains with high level Tp resistance, resistance to this antimicrobial was plasmid-encoded, in most strains by plasmids with MWs ranging from 70-100 MDa. On the basis of restriction endonuclease analysis, four different categories of Tp resistance plasmids were identified in Tp-resistant strains of S. typhimurium. Hybridization with the DHFR I probe was observed in three strains of Tp-resistant S. typhimurium and two strains of Tp-resistant S. enteritidis; in contrast, in none of the strains tested was there any detectable hybridization with the probes for DHFR types II, IV and V. It is concluded that the DHFR type I resistance mechanism, common in Tp-resistant enterobacteria in many European countries, is relatively uncommon in Tp-resistant salmonellas isolated in Sicily. Furthermore, the DHFR V resistance mechanism, previously identified in strains of Shigella sonnei isolated in Sicily and associated with travellers from Sri Lanka, has not yet appeared in salmonellas in Sicily.

Aguilera P.A. et al. *Emergency transvenous cardiac pacing placement using ultrasound guidance.* Ann Emerg Med. 2000; 36(3) : 224-7.p Abstract: STUDY OBJECTIVE: We describe 9 patients who underwent ultrasound-guided transvenous cardiac pacing in which ultrasonographic imaging was used to assist and confirm the placement of electrode catheters within the right ventricle. METHODS: We prospectively enrolled consecutive patients with complete heart block who received emergency ultrasound-assisted transvenous cardiac pacing (TVCP). Emergency physicians performed both ultrasound scanning and placement of the TVCP electrodes at a busy urban teaching medical center. RESULTS: Real-time ultrasound-guided TVCP was successful in 8 (88.9%) of the 9 patients studied. The pacing catheter was not adequately visualized in 1 patient who ultimately required placement by a cardiologist. Echocardiography was useful in identifying pacing catheter misplacement and subsequent successful repositioning in 3 patients. CONCLUSION: Emergency physicians should be aware that ultrasound technology could be useful in assisting TVCP in the emergency department setting. Further investigation is required to adequately evaluate this modality as a new indication for ED echocardiography.

Ahearn D.G. et al. *Effects of hydrogel/silver coatings on in vitro adhesion to catheters of bacteria associated with urinary tract infections.* Curr Microbiol. 2000; 41(2) : 120-5.p Abstract: Sections of sterile all-silicone-, hydrogel/silver-all-silicone-, and hydrogel/silver-latex-Foley urinary catheters were exposed to suspensions of bacteria and Candida albicans associated with urinary tract infections. The adhesion of these microorganisms to the catheters was determined with a radiolabel-cell procedure and scanning electron microscopy. Anomalous data with the radiolabel procedure were produced with the hydrogel/silver-latex catheters for certain species. These aberrant data were related to adhesion on the untreated cut ends of the latex

catheter. Radiolabel-cell-adhesion procedures that involve sections of coated materials may need to be supplemented with additional procedures such as scanning electron microscopy for valid interpretations of the data. Adhesion to the hydrogel/silver catheters by both Gram-positive- and Gram-negative bacteria most commonly associated with nosocomial urinary tract infections, including a strain of Pseudomonas aeruginosa noted for its superior adhesion capacity, was significantly lower than the adhesion to the control all-silicone catheter.

Ahmad S. et al. *Urinary tract infection at a specialist hospital in Saudi Arabia.* Bangladesh Med Res Counc Bull. 1995; 21(3) : 95-8.p Abstract: Midstream specimens of urine from inpatients and out patients at King Fahd Specialist Hospital in Buraidah, Saudi Arabia, were collected over a period of 12 months to determine prospectively the frequencies of different causative organisms and their antimicrobial susceptibility. A total of 854 from 4157 specimens (20.54%) gave significant bacterial counts i.e., counts greater than 10(5) organisms per millilitre. Escherichia coli was the commonest organism (50.11%) followed by Klebsiella spp. (28.33%) Pseudomonas spp. (7.84%) and Proteus spp. (4.91%). Other bacterial pathogens were Enterococcus spp. (3.98%), Acinetobacter spp. (1.84%), Staphylococcus aureus (1.63%), Enterobacter spp. (0.35), Staphylococcus epidermidis (0.30%), Haemolytic streptococci B (0.47%) and Salmonella paratyphi A (0.12%). In vitro drug sensitivity tests showed norfloxacin and nalidixic acid to be very effective for most of the strains of the bacterial pathogens. A very high proportion of strains of Escherichia coli (86%) and Klebsiella spp. (94.6%) were found to be resistant to ampicillin.

Ahman H. et al. *Streptococcus pneumoniae capsular polysaccharide-diphtheria toxoid conjugate vaccine is immunogenic in early infancy and able to induce immunologic memory.* Pediatr Infect Dis J. 1998; 17(3) : 211-6.p Abstract: BACKGROUND: Pneumococcal polysaccharide vaccines are not protective against the most common pneumococcal infections in infancy. The importance of pneumococcal diseases and emerging antimicrobial resistance emphasize the need for prophylaxis. METHODS: Pneumococcal conjugate vaccine, containing capsular polysaccharides from serotypes 6B, 14, 19F and 23F conjugated to diphtheria toxoid (PncD), was given to 75 infants at 2, 4 and 6 months of age. Three dosages (1, 3 or 10 microg of each) were used. A placebo group of 49 infants received physiologic saline. Children were given a booster dose of either polysaccharide or conjugate vaccine at 14 months of age; the placebo group received conjugate vaccine. Antibody concentrations were determined with an enzyme immunoassay. RESULTS: The highest dose induced the strongest response after primary immunization, but booster response was greatest in the group primed with the lowest dose. Polysaccharide and conjugate vaccines induced booster responses of the same magnitude. At 24 and 36 months of age the antibody concentrations were similar in children who had received the PncD in infancy and in children immunized at 14 months of age only. CONCLUSIONS: The PncD conjugate vaccine is immunogenic and able to induce immunologic memory.

Ahuja G.S. et al. *What role for antibiotics in otitis media and sinusitis?* Postgrad Med. 1998; 104(3) : 93-9, 103-4.p Abstract: In patients with otitis media or sinusitis, antibiotics must be used judiciously. First-line treatment for both uncomplicated acute otitis media and acute sinusitis is amoxicillin. Erythromycin ethylsuccinate and sulfisoxazole or TMP-SMZ may be used in patients who are allergic to penicillin. Beta-lactamase-stable agents should be given when no response occurs within 48 to 72 hours. In cases in which penicillin-resistant pneumococcus is suspected, high-dose amoxicillin, with or without clavulanate, or clindamycin should be considered. Antibiotics are not indicated for initial treatment of otitis media with effusion but may be considered for effusions lasting longer than 3 months. Prophylactic antibiotics should be considered only for recurrent acute infections occurring three or more times within 6 months or four or more times within a year. The common cold should not be treated with antibiotics, and antimicrobial therapy should be initiated only when there is reasonable clinical certainty about the presence of acute sinusitis.

Aidara A. et al. *Phenotypic and genotypic characterization of Vibrio cholerae isolates from a recent cholera outbreak in Senegal: comparison with isolates from Guinea-Bissau.* Am J Trop Med Hyg. 1998; 58(2) : 163-7.p Abstract: A total of 127 strains of Vibrio cholerae (117 V. cholerae O1 and 10 nonagglutinating strains) isolated from a recent cholera outbreak in Senegal and four strains isolated in Guinea-Bissau (during the survey of a cholera epidemic that occurred 10 months before the Senegalese one) were analyzed. Strains were characterized by conventional methods (biochemical and serologic identification, susceptibility to antimicrobial agents), polymerase chain reaction for genes encoding cholera toxin (CtxA), zonula occludens toxin (Zot), and accessory cholera enterotoxin (Ace), and by ribotyping. Conventional methods showed that all strains of V. cholerae O1 belonged to serotype Ogawa, biotype El Tor and were resistant to the vibriostatic agent O129 (2,4-diamino 6,7-diisopropylpteridine phosphate), cotrimoxazole, and chloramphenicol; all strains were sensitive to tetracycline, a drug that has been extensively used in cholera therapy. Most of these V. cholerae O1 (112 strains from Senegal and four strains from Guinea-Bissau) had an intact core region (virulence cassette) and amplified a 564-basepair (bp) fragment of ctxA, a 1083-bp fragment of zot, and a 314-bp fragment of ace. Ribotyping of V. cholerae O1 strains after Bgl I restriction of total DNA revealed that ribotype B5a, which is the predominant ribotype of this seventh pandemic of cholera, was not isolated. Instead, a new ribotype was identified and designated B27 in our data bank. Since O1 isolates from Guinea-Bissau and Senegal have the same biotype, serotype, and ribotype and as the Guinea-Bissau outbreak that preceded the one in Senegal, this emerging ribotype probably came from Guinea-Bissau. Nonagglutinating strains exhibited no resistance to the O129 agent and to the tested antibiotics, they were all negative for virulence cassette, except for one strain with the ctxA and zot genes isolated from a patient with diarrhea, and there was a great variability of ribotypes among these strains. There was no difference between environmental O1 strains isolated from water and strains isolated from patients with cholera, suggesting that fecally contaminated water is an important reservoir for infection.

Aitmhand R. et al. *Serotypes and antimicrobial susceptibility of group B streptococcus isolated from neonates in Casablanca.* Scand J Infect Dis. 2000; 32(3) : 339-40.p Abstract: The serotypes and the levels of antibiotic resistance of 59 Streptococcus agalactiae isolates from neonates in Casablanca, from February 1992 to July 1997, were studied. Most of the isolates (86.4%) were recovered from early-onset disease. The serotype distribution was as follows: serotype III 39%; serotype Ia 32.2%; and serotype V 10.2%. All strains were susceptible to penicillin G, cefotaxime and ampicillin, whereas 1 strain was resistant to erythromycin. No high level of resistance to gentamicin was detected. A vaccine should comprise the most prevalent serotypes and also provide protection against serotype V disease. The antibiotic susceptibility patterns reported here support the recommended treatment and prophylaxis of invasive group B Streptococcal disease.

Akalin H. et al. *Influences of alternate therapy protocol and continuous infectious disease consultation on antibiotic susceptibility in ICU.* Intensive Care Med. 1999; 25(9) : 1010-2.p Abstract: In this study, the effects of alternate use of imipenem and cefoperazone/sulbactam(CFP/Sul) on antibiotic resistance in the intensive care unit (ICU) were investigated. Between 1 April 1993 and 1 April 1994, the infectious diseases consultant saw patients when required and there was no alternative therapy for antibiotics. For the following 2 years, the same consultant followed up each patient from admission to discharge by daily visits to the ICU and an alternative therapy protocol was initiated. The most common

microorganisms were found to be Acinetobacter baumannii and Staphylococcus aureus, followed by Pseudomonas aeruginosa and Klebsiella pneumoniae, respectively, in the two periods. This study demonstrated that sensitivity rates of imipenem, ciprofloxacin and aminoglycosides were improved as a result of this protocol.

Akan O. et al. *Antibiotic susceptibilities of enterococci isolated from Turkish children*. Turk J Pediatr. 1997; 39(1) : 13-7.p Abstract: To evaluate the antibiotic resistance rates of enterococci isolated at Hacettepe Children's Hospital, in vitro antibiotic susceptibility tests were performed in 77 enterococci (32 hospital, 45 nonhospital strains) isolated from various clinical specimens in 1994. Microbroth dilution tests against ampicillin, vancomycin, gentamicin and streptomycin were performed according to the NCCLS standards. High-level resistance to aminoglycosides was investigated. Ampicillin resistance rates were 21.9 percent and 2.2 percent for hospital and nonhospital strains, respectively ($p < 0.01$). The same rates were 46.9 and 13.3 percent for gentamicin ($p < 0.01$), and 15.6 and 13.3 percent for streptomycin ($p = 0.25$). No resistance was detected against vancomycin. Six strains (7.8%) showed high-level resistance to both aminoglycosides studied. Special attention should be paid to enterococci isolated from hospitalized patients. Appropriate antibiotic use in serious infections can only be achieved by choosing an appropriate regimen according to antibiotic susceptibility tests. Periodic evaluation of the antibiotic susceptibility patterns of enterococci is necessary for the empirical treatment of infections due to these microorganisms.

Akan O. et al. *Antibiotic susceptibilities of Salmonella serogroups isolated from Turkish children*. Turk J Pediatr. 1997; 39(1) : 7-11.p Abstract: This study is performed to show the serogroup distribution and in-vitro antibiotic susceptibilities of Salmonella species that cause either gastroenteritis with/without bacteremia or enteric fever at Hacettepe University Ihsan Dogramaci Children's Hospital. Of the 309 Salmonella strains evaluated, serogroup B was the most common isolate (56%) followed by serogroup D (33%). Antibiotic susceptibility tests using the disk diffusion technique revealed resistance rates of 43 percent for ampicillin, 41 percent for chloramphenicol, 29 percent for trimethoprim-sulfamethoxazole (SXT) and 32 percent for ceftriaxone among Salmonella serogroup B. The same rates were 10, eight, seven and zero percent for Salmonella serogroup D, and seven, 14, and zero percent for serogroup C, respectively. S.thypi strains susceptible to all antibiotics studied except tetracycline (33% resistant). No resistance was detected against the quinolones. The antibiotic resistance of Salmonella species isolated from children seems to be important, especially in serogroup B. Susceptibility tests should be considered in the antimicrobial therapy of Salmonella infections where indicated.

Akhunova N.R. et al. *[The anticomplement activity of Neisseria gonorrhoeae]*. Zh Mikrobiol Epidemiol Immunobiol. 1997; (4) : 63-7.p Abstract: Bacteria of the species N. gonorrhoeae have anticomplementary activity whose absolute values exceed the level of this activity both in other representatives of the genus Neisseria and in microorganisms of other taxonomic groups found in the microbiocenosis of the reproductive tract. The specificity of the anticomplementary action of N. gonorrhoeae extracellular products with respect to individual components of the complement system, as well as their role in the formation of the state of seroresistance and in the determination of the effectiveness of the interaction of gonococci with neutrophilic phagocytes in the system of opsonic cooperation, have been characterized.

Akindele J.A. et al. *Outbreak of neonatal Klebsiella septicaemia: a review of antimicrobial sensitivities.* Afr J Med Med Sci. 1997; 26(1-2) : 51-3.p Abstract: A 10-week prospective study was undertaken to document the antibiotic susceptibilities of klebsiella organisms which were responsible for an outbreak of septicaemia on the neonatal units of the University College Hospital, Ibadan, Nigeria. The thirty-nine isolates obtained comprised K. pneumoniae, 18 (46.2%), K. aerogenes, 17 (43.6%), K. edwardsii, 3 (7.7%), and K. oxytoca, 1(2.5%). All the strains were sensitive to ciprofloxacin and ofloxacin, but resistant to ampicillin. The percentage of qualitative sensitivities of the klebsiella species to other available drugs were 41% for ceftazidime, 36% for cefotaxime, 31% for ceftriazone, 23% for cefuroxime, 21% for gentamycin, and 15% for kanamycin. Quantitative sensitivities of the three most commonly isolated sub-types to netilmycin were 63%, 36%, and 33%, respectively. A comparison with a previous antibiotic susceptibility study still showed persistent resistance to the available aminoglycosides.

Akiyama H. et al. *Adherence characteristics and susceptibility to antimicrobial agents of Staphylococcus aureus strains isolated from skin infections and atopic dermatitis.* J Dermatol Sci. 2000; 23(3) : 155-60.p Abstract: We examined the adherence characteristics and susceptibility to various antimicrobial agents of 130 strains of Staphylococcus aureus isolated from infective skin lesions and 135 strains of S. aureus isolated from non-infective eczematous lesions of atopic dermatitis (AD) patients. The isolation rate of methicillin-resistant S. aureus (MRSA) was 27.7% in strains from clinical sources excluding AD and 31.1% in those from AD. Coagulase type II strains were most frequently observed in MRSA strains isolated from all sources excluding AD, and coagulase type III strains were most frequently observed in those isolated from AD. We proposed that antimicrobial treatment for AD patients should be carefully designed to prevent MRSA infection. Plasma coagulation ability was lowest in S. aureus strains isolated from abscesses, suggesting that the lower production of fibrin observed in abscesses may assist the infiltration of neutrophils into skin tissues and that a decrease in plasma coagulation ability may enable abscess formation. Adherence to polypropylene tubes with slime production was most evident in S. aureus strains isolated from felon and least evident in those isolated from cellulitis and lymphangitis. Tube adherence was characteristic of the S. aureus strains attached to superficial skin tissues, but not necessarily for strains that had infiltrated the deep skin tissues. Fusidic acid demonstrated significant antimicrobial activity against the MRSA strains, but rifampicin was the strongest antimicrobial agent.

Akpede G.O. et al. *Response to antimicrobial therapy in childhood bacterial meningitis in tropical Africa: report of a bi-centre experience in Nigeria, 1993-1998*. Ann Trop Paediatr. 1999; 19(3) : 237-43.p Abstract: Recent reports of a high prevalence of in-vitro resistance to chloramphenicol (CHL) and penicillin (PEN)/ampicillin (AMP) cause concern because of cost implications in using the newer cephalosporins (CEPH) to treat meningitis in resource-poor countries. However, the clinical significance of many of the observations is uncertain because of limited back-up by clinical data. We analysed the response in an open study of 161 patients with bacterial meningitis treated with CHL (n = 31), CHL plus PEN or AMP (n = 101), PEN or AMP (n = 14) and CEPH (n = 15). No significant differences were observed in clinical course and outcome in the four treatment groups, other than a higher prevalence of seizures after 72 h of treatment and a higher prevalence of neurological sequelae in survivors in the CEPH and CHL groups. This may reflect the higher number of infants and greater frequencies of uncommon aetiological agents in the CHL and CEPH groups. It is concluded that response to initial chloramphenicol-based treatment regimens remains satisfactory and that there is as yet no compelling reason to switch to the cephalosporins as first-line therapy for bacterial meningitis in developing countries.

Aksaray S.g. et al. *Surveillance of antimicrobial resistance among gram-negative isolates from intensive care units in eight hospitals in Turkey.* J Antimicrob Chemother. 2000; 45(5) : 695-9.p Abstract: With the participation of eight major reference hospitals in Turkey, 749 aerobic Gram-negative isolates obtained from 473 intensive care patients in 1997 were tested for their susceptibility to 13 commonly employed antibacterial agents. The frequency with which species were isolated and resistance rates were compared with data from the

previous 2 years. Imipenem was the most active agent against the majority of isolates (75%), followed by ciprofloxacin, cefepime and amikacin. The per cent susceptibility to all antibiotics declined from 1995 to 1996. With the exception of imipenem, for which there was no change in resistance, the per cent susceptibility somewhat increased in 1997. However, it was still lower than in 1995.

Aksiutina L.P. et al. *[Tuberculosis as hospital acquired infection].* Probl Tuberk. 1998; (1) : 5-7.p Abstract: Tuberculosis morbidity rates were analyzed in the staff of antituberculosis dispensaries and institutions of the general therapeutical network. There were 74 cases of tuberculosis among the medical workers in 1993-1996. The sociomedical characteristics of the medical staff suffering from tuberculosis are given. The findings show it necessary to refer tuberculosis to a group of hospital-acquired infections and to implement a package of prophylactic measures to reduce tuberculosis morbidity rates among medical workers, as well as to timely detect patients with tuberculosis at general hospitals. Measures for preventing tuberculosis are proposed for the personnel of therapeutical institutions.

Aksnes J. et al. *[Surgical treatment of infective endocarditis].* Tidsskr Nor Laegeforen. 1998; 118(2) : 216-9.p Abstract: Patients operated on for infective endocarditis (n = 69) at two regional hospitals between 1988 and 1994 are reviewed. 70% had a known valvular heart disease and 16% had prosthetic valve endocarditis. In 28% the offending microorganism was Staphylococcus aureus; in 26% Streptococcus viridans. Therapy was intended to be a six-week antibiotic course before operating, but 55% of the patients had to be operated on earlier. The postoperative course was uncomplicated in 59%, mortality was 16% and one-year survival 81%. Increased risk of death was associated with operating before the six-week course of antibiotics was completed (p = 0.005), with preoperative renal failure (p = 0.006) or lung failure (p = 0.008), with the growth of microorganisms from tissue samples extirpated during the operation (p = 0.01), with additional surgical procedures concomitant to valvular replacement (p = 0.02), S. aureus endocarditis (p = 0.03), and with the presence of paravalvular abscesses or intracardial fistulas (p = 0.03). The study shows that infective endocarditis is a serious disease. Wherever clinically feasible, all patients should be given antibiotics for six weeks before evaluating surgery. However, close surveillance of infection and haemodynamics is necessary to allow for the possibility of acute surgery before the development of organ failure. Special attention must be paid to cases of S. aureus endocarditis.

Al-Harthi L. et al. *Bacterial vaginosis-associated microflora isolated from the female genital tract activates HIV-1 expression.* J Acquir Immune Defic Syndr. 1999; 21(3) : 194-202.p Abstract: Alteration of cervicovaginal microbial flora can lead to vaginosis, which is associated with an increased risk of HIV-1 transmission. We recently characterized a soluble HIV-inducing factor (HIF) from the cervicovaginal lavage (CVL) samples of women. The goals of this study were to determine the effect of cervicovaginal microflora on HIV-1 expression and to elucidate the relationship between HIF activity and microflora. Physiologically relevant microorganisms, Mycoplasma, diphtheroid-like bacteria, Gardnerella vaginalis, Streptococcus agalactiae, and Streptococcus constellatus, cultured from the CVL of a representative woman with a clinical condition of bacterial vaginosis and possessing HIF activity, induced HIV-1 expression. The magnitude of virus induction varied widely with the greatest stimulation induced by diphtheroid-like bacteria and Mycoplasma. The transcriptional induction by Mycoplasma was mediated by activation of the KB enhancer, an activation mechanism shared with HIF. Also as with HIF, Mycoplasma induced AP-1 dependent transcription. Polymerase chain reaction (PCR)-based speciation showed that the isolate was M. hominis. Our data indicate that bacterial vaginosis-associated microflora can enhance HIV-1 transcription and replication and identify M. hominis as a potential source for HIF activity. The virus-enhancing activities associated with the microflora and HIF may increase genital tract viral load, potentially contributing to HIV transmission.

Al-Hilali N. et al. *Xanthomonas maltophilia infection in chronic peritoneal dialysis patients.* Scand J Urol Nephrol. 2000; 34(1) : 67-9.p Abstract: Xanthomonas maltophilia infection has only been occasionally reported in patients receiving chronic peritoneal dialysis. We describe four cases of Xanthomonas maltophilia infection associated with chronic peritoneal dialysis. Two patients presented with peritonitis and two with exit site infection. All patients were diabetics, who immediately prior to the study had not received antibiotic therapy. Failure to respond to multiple antibiotic therapy resulted in catheter removal in both patients with peritonitis. In those patients with only exit site infections, dialysis could be continued following antibiotic therapy and catheter replacement in one. Catheter loss in our patients was directly attributed to peritonitis with Xanthomonas maltophilia infection.

al-Mugeiren M.M. et al. *Bacteriologic profile and drug resistance in pediatric patients with symptomatic bacteriuria.* Clin Ther. 1996; 18(2) : 295-300.p Abstract: The bacteriologic profile in 1081 pediatric patients with culture-positive symptomatic bacteriuria was studied over a 30-month period in a 500-bed acute care hospital in Riyadh, Saudi Arabia. Microbial isolates were considered significant if their numbers equaled or exceeded 10,000 colony-forming units/mL in symptomatic patients. Escherichia coli was the most common causative agent of urinary tract infections (55.1%), followed by Pseudomonas aeruginosa (11.9%), Klebsiella pneumoniae (10.0%), and Enterococcus species (6.1%). Results of antimicrobial susceptibility testing indicated that nitrofurantoin and cephradine may be used as empiric therapy pending laboratory investigation; gentamicin can be added in the treatment in severely ill inpatients, and treatment can be modified when microbiologic results become available.

Al-Orifi F. et al. *Urine culture from bag specimens in young children: are the risks too high?* J Pediatr. 2000; 137(2) : 221-6.p Abstract: OBJECTIVE: To compare the risks of contaminated culture results and consequent adverse clinical outcomes in urine specimens obtained by "clean-voided" bag method versus catheterization. STUDY DESIGN: Hospital-based cohort study of all children </=24 months with outpatient urine cultures (n = 7584) obtained from January 1993 to December 1995. Medical records were followed up for all children with contaminated culture results who had 1 or more additional cultures within 7 days of the original culture. Contamination rates of bag urine cultures from the emergency department and a pediatric test center were compared. RESULTS: Contamination rates were 62.8% and 9.1% (P <.001) in bag versus catheter specimens, respectively. Contamination rates of bag urine specimens collected in the emergency department and pediatric test center were 56.4% versus 69. 25%, respectively. Of the 3440 contaminated urines, 132 (1.7%) resulted in 1 or more adverse clinical outcomes. Adjusted odds ratios (and 95% CI) for these outcomes in bag versus catheter specimens were as follows: 4.9 (2.3 to 10.5) for unnecessary recall, infinite for delayed diagnosis and treatment, 4.8 (1.8 to 12.4) for unnecessary treatment, 15.6 (2.1 to 116.8) for unnecessary prolonged treatment, 4.1 (1.4 to 12.1) for unnecessary radiologic investigation, and 12.4 (1.6 to 95.5) for unnecessary hospital admission. CONCLUSIONS: The risks of the "noninvasive" bag urine culture appear to exceed its benefits.

al Soub H. et al. *Hospital-acquired candidaemia: experience from a developing country.* J Hosp Infect. 1997; 35(2) : 141-7.p Abstract: Thirty-seven episodes of hospital-acquired candidaemia, which occurred over a two-year period, were reviewed. The predominant risk factors were previous antibiotic therapy (100%), indwelling central venous catheter (94.6%), parenteral hyperalimentation (78.3%) and preceding surgery (51.4%). Eighty-nine percent of the patients had three or more risk factors. Candida albicans (56.8%), and Candida tropicalis (13.5%) were the most common isolates. Mortality was 48.6%. No

significant difference was observed between patients treated with amphotericin B and those treated with fluconazole. The age of the patient, species of Candida, number of positive blood cultures for Candida, concomitant bacteraemia, and antifungal therapy did not have any significant effect on outcome. Our results were similar, in many aspects, to those reported from developed countries.

Albrecht W.E. et al. *Infected abdominal aortic aneurysm due to penicillin-, ceftriaxone-, and cefotaxime-resistant Streptococcus pneumoniae.* J Clin Microbiol. 1997; 35(4) : 985-7.p Abstract: The clinical course for a patient hospitalized with pneumonia and meningitis due to penicillin-, ceftriaxone-, and cefotaxime-resistant Streptococcus pneumoniae is described. The pneumonia and meningitis responded to antimicrobial therapy, but the patient died following rupture of an infected abdominal aortic aneurysm; gram-positive cocci resembling S. pneumoniae were detected within the aneurysm.

Albrich W.C. et al. *Drug resistance in intensive care units.* Infection. 1999; 27 Suppl 2 : S19-23.p Abstract: Intensive care units (ICUs) are generally considered epicenters of antibiotic resistance and the principal sources of outbreaks of multi-resistant bacteria. The most important risk factors are obvious, such as excessive consumption of antibiotics exerting selective pressure on bacteria, the frequent use of invasive devices and relative density of a susceptible patient population with severe underlying diseases. Infections due to antibiotic-resistant bacteria have a major impact on morbidity and health-care costs. Increased mortality is not uniformly shown for all of these organisms: Methicillin-resistant Staphylococcus aureus (MRSA) seems to cause significantly higher mortality, in contrast to vancomycin-resistant enterococci (VRE). Therefore it is essential to diminish these potential risk factors, especially by providing locally adapted guidelines for the prudent use of antibiotic therapy. A quality control of antimicrobial therapy within a hospital, and especially within the ICU, might help to minimize the selection of multidrug-resistant bacteria. The restricted use of antimicrobial agents in prophylaxis and therapy has also been shown to have at least temporal effects on local resistance patterns. New approaches to the problem of drug resistance in ICUs are badly needed.

Alcaide F. et al. *In vitro activities of eight macrolide antibiotics and RP-59500 (quinupristin-dalfopristin) against viridans group streptococci isolated from blood of neutropenic cancer patients.* Antimicrob Agents Chemother. 1996; 40(9) : 2117-20.p Abstract: From January 1988 to December 1994, 66 consecutive blood culture isolates of viridans group streptococci collected from febrile neutropenic cancer patients were tested for antimicrobial susceptibilities by the agar dilution method. The antibiotics studied were erythromycin, clarithromycin, roxithromycin, dirithromycin, azithromycin, josamycin, diacetyl-midecamycin, spiramycin, and quinupristin-dalfopristin. A total of 26 (39.4%) strains were resistant to erythromycin with an MIC range of 0.5 to > 128 micrograms/ml. The strains were classified into three groups according to their penicillin susceptibility: 42 (63.6%) were susceptible, 8 (12.1%) were intermediately resistant, and 16 (24.3%) were highly resistant. The percentages of erythromycin-resistant strains in each group were 23.8, 62.5, and 68.8%, respectively. Streptococcus mitis was the species most frequently isolated (83.3%) and showed the highest rates of penicillin (40%) and erythromycin (43.6%) resistance. MICs of all macrolide antibiotics tested and of quinupristin-dalfopristin were higher for penicillin-resistant strains than for penicillin-susceptible strains. All macrolide antibiotics tested had cross-resistance to erythromycin, which was not observed with quinupristin-dalfopristin. Our study shows a high rate of macrolide resistance among viridans group streptococci isolated from blood samples of neutropenic cancer patients, especially those infected with penicillin-resistant strains. These findings make macrolides unsuitable prophylactic agents against viridans group streptococcal bacteremia in this patient population.

Aldous W.K. et al. *Cocaine and lidocaine with phenylephrine as topical anesthetics: antimicrobial activity against common nasal pathogens.* Ear Nose Throat J. 1998; 77(7) : 554-7.p Abstract: Topical anesthetics are commonly used in the evaluation of nasal pathology. The anesthetics routinely used, 4% lidocaine with phenylephrine, or 4% cocaine, have been demonstrated to have varying inhibitory effects on bacterial cultures. The present study examined the antimicrobial activity of these topical anesthetics used in nasal procedures. The pathogens used were Branhamella catarrhalis, Enterobacter sp., Haemophilus influenzae, Klebsiella pneumoniae, Pseudomonas aeruginosa, Staphylococcus aureus and Streptococcus pneumoniae. Organisms were against two-fold serial dilutions of stock preparations of 4% lidocaine with 0.25% phenylephrine, 0.25% phenylephrine, 0.1% methylparaben, 250 mg/ml ampicillin, and 4% cocaine. The minimum inhibitory concentration and minimum bactericidal concentration for each of the solutions were obtained. The bacteria studied varied gently in their susceptibility to lidocaine with phenylephrine versus cocaine: Cocaine consistently exhibited greater antimicrobial activity than lidocaine. Phenylephrine and methylparaben showed slight antimicrobial activity. These topical anesthetics have slight bactericidal activity against nasal pathogens, which can sometimes lead to false-negative results. Otolaryngologists should recognize the possible antimicrobial effects of topical anesthetics when culturing specimens. This is especially important when the specimen will be used for guidance of antimicrobial therapy, as in the case of the critically ill patient who requires aspiration for organism-specific therapy. Further studies, specifically in vivo experiments, are needed to determine if use of the drugs produces a significant change in the ability to culture organisms from these sites. This type of study would, however, be difficult to perform, since most patients requiring aspiration are already on high-dose antibiotics that would inhibit the growth of most microorganisms. A modified aspiration technique using a less concentrated topical anesthetic will likely be required to increase the chances of obtaining positive cultures.

Aldridge K.E. *The occurrence, virulence, and antimicrobial resistance of anaerobes in polymicrobial infections.* Am J Surg. 1995; 169(5A Suppl) : 2S-7S.p Abstract: Polymicrobial aerobic/anaerobic bacterial infections occur frequently and have been documented in most anatomic sites in the body. The etiology of these infections is endogenous in that the normal microbial flora that colonize the various mucosal surfaces of the body can be isolated from these infections after trauma to these membranes allowing these organisms access to normally sterile sites. Subsequently, the organisms begin to proliferate, causing extensive tissue damage. These infections may spread to adjacent tissues or become loculated with abscess formation. In patients judged to have severe infection, surgery is often needed to debride the advancing spread of the infection, remove loculated pus, and reestablish sufficient blood flow to deliver appropriate antimicrobial agents to the infected site. Choice of antimicrobial agents should include agents with activity against both aerobes and anaerobes. Although a variety of anaerobes can be isolated from these infections, the Bacteroides fragilis group is the most clinically important group of anaerobes because of the production of virulence factors and the high incidence of beta-lactamase production. Against the various B. fragilis group species, metronidazole remains a very active agent, whereas resistance rates to clindamycin are high among the non-B. fragilis species. Because of the good activity of many cephalosporin/cephamycin agents against aerobic gram-negative bacteria and moderate to good activity against anaerobes, these compounds remain as broad-spectrum choices for use in therapy of mixed infections. The addition of beta-lactamase inhibitors (tazobactam, sulbactam, or clavulanate) to various beta-lactam agents has increased their antimicrobial spectrum against certain groups of aerobes, and particularly against beta-lactamase-producing anaerobes, including the B. fragilis group. The choice of single-agent therapy of mixed infections is ideally based on local data of susceptibility patterns of the various aerobes and anaerobes involved in these infections.

Aldridge K.E. et al. *A multicenter study of the prevalence and susceptibility patterns of isolates of Streptococcus pneumoniae with reduced susceptibility to penicillin G in Louisiana*. Am J Med Sci. 1998; 316(4) : 277-84.p Abstract: Because of increasing reports of multiple-antibiotic-resistant strains of Streptococcus pneumoniae and associated clinical failures, this study was performed to determine the prevalence of multiresistance among strains from nine Louisiana medical centers. Using a National Committee for Laboratory Standards broth microdilution method, 481 strains were tested. Of these, 70% were penicillin-susceptible (PS), 23% had intermediate minimum inhibitory concentration values to penicillin (I), and 7% were fully resistant to penicillin (PR). The isolation rates (15% to 40% for I strains and 0% to 33% for PR strains) at the various medical centers varied appreciably. The prevalence of penicillin resistance was highest among upper respiratory isolates, while cross-resistance to other antimicrobials varied. The least cross-resistance was noted among PS strains. However, strains with reduced penicillin susceptibility had high levels of cross-resistance. Among I strains, the prevalence of cross-resistance (%) was noted for amoxicillin/clavulanate (6%), cefuroxime (71%), cefaclor (91%), ceftriaxone (13%), cefotaxime (34%), erythromycin (67%), azithromycin (32%), and clarithromycin (32%). For PR strains, the prevalence of cross-resistance was 97% for amoxicillin/clavulanate, cefuroxime, and cefaclor; 67% for ceftriaxone and erythromycin; 89% for cefotaxime; and 69% for azithromycin and clarithromycin. These data emphasize the high prevalence of multiple-antimicrobial-resistance among strains of S pneumoniae with reduced penicillin susceptibility in this geographic area.

Aldridge K.E. et al. *A comparison of susceptibility results of the Bacteroides fragilis group and other anaerobes by traditional MIC results and statistical methods.* J Antimicrob Chemother. 1997; 39(3) : 319-24.p Abstract: Antimicrobial susceptibility is compared by MIC values reflecting activity by weight and/or percentage of strains resistant. This study establishes these parameters in vitro in the traditional fashion and extends analysis statistically for various groups of anaerobic bacteria. Mode MIC, MIC50, MIC90 values and percentage of strains resistant indicated comparable activity for most of the beta-lactams. Geometric and arithmetic MICs suggested ceftizoxime to be the most active beta-lactam. Statistical analysis of all log2 values showed that metronidazole was the most active followed by clindamycin and that ceftizoxime was significantly more active than cefotaxime, piperacillin, ceftriaxone or cefoxitin.

Alef K. *Clostridium difficile-associated disease. Implications for midwifery practice.* J Nurse Midwifery. 1999; 44(1) : 19-29.p Abstract: Clostridium difficile-associated disease (CDAD), a gastrointestinal infection with a wide range of manifestations whose primary symptom is diarrhea, occurs when antibiotic medications, or rarely other drugs or conditions, disrupt the normal colonic microflora, making it susceptible to the growth of toxigenic C difficile. It is a significant nosocomial infection and an increased incidence has been noted in recent years. Although infrequently seen in midwifery practices, it does occur and may increase with the growing usage of intrapartal antibiotics. Midwives may evaluate and treat a client with an initial episode of mild to moderate CDAD; they also may manage collaboratively or refer for medical management those clients with recurrent or severe disease. This article reviews the epidemiology, pathogenesis, clinical presentation, prevention, and midwifery management of initial and recurrent CDAD. The limitation in the use of oral vancomycin due to the emergence of vancomycin-resistant enterococcus, resulting in metronidazole becoming the primary agent for treatment of CDAD, and the implications of this in the treatment of CDAD during pregnancy and lactation are addressed.

Aleshin V.V. et al. *The broad host range plasmid pLF1311 from Lactobacillus fermentum VKM1311.* FEMS Microbiol Lett. 1999; 178(1) : 47-53.p Abstract: The complete nucleotide sequence (2389 bp) of the cryptic plasmid pLF1311 from Lactobacillus fermentum VKM1311 was determined. DNA sequence analysis revealed the putative coding regions for a replicative protein (RepB), its repressor (RepA) and double-stranded (dso) and single-stranded (sso) origins. pLF1311 belongs to the pE194 family of rolling circle-replicating plasmids. A derivative of pLF1311 that contains the cat gene of plasmid pC194 of Staphylococcus aureus and the oriT of RP4 was constructed and transferred by conjugative mobilization from Escherichia coli to various Gram-positive bacteria. The stable maintenance of this derivative was shown in some strains of Lactobacillus, Lactococcus, Enterococcus and Bacillus under non-selective conditions.

Alexander C.J. et al. *Identification and antimicrobial resistance patterns of clinical isolates of Clostridium clostridioforme, Clostridium innocuum, and Clostridium ramosum compared with those of clinical isolates of Clostridium perfringens.* J Clin Microbiol. 1995; 33(12) : 3209-15.p Abstract: Clostridium ramosum, C. innocuum, and C. clostridioforme are frequently isolated from clinical specimens including blood. Because of Gram stain variability, a lack of spores, and atypical colonial morphology, identification of these species is often difficult. Three anaerobe identification kits were evaluated for their abilities to identify these species. For comparison, 11 strains of C. perfringens were evaluated in parallel. By using profile numbers and codebooks, the correct genus and species were identified, as follows: with the RapID ANA II kit, 100% (20 of 20) of C. ramosum isolates, 24% (5 of 21) of C. innocuum isolates, and 50% (10 of 20) of C. clostridioforme isolates; with the AnIDent kit, 60% (12 of 20) of C. ramosum isolates, 28% (6 of 21) of C. innocuum isolates, and 90% (18 of 20) of C. clostridioforme isolates; with the ATB32A kit, 70% (14 of 20) of C. ramosum isolates, 0% (0 of 21) of C. innocuum isolates, and 40% (8 of 20) of C. clostridioforme isolates. Profile numbers that overlapped several species were obtained as follows: with the RapID ANA II kit, 0% of C. ramosum isolates, 76% of C. innocuum isolates, and 40% of C. clostridioforme isolates; with the AnIDent kit 40% of C. ramosum isolates, 62% of C. innocuum isolates, and 5% of C. clostridioforme isolates; with the ATB32A kit, 15% of C. ramosum isolates, 52% of C. innocuum isolates, and 25% of C. clostridioforme isolates. One strain of C. innocuum was misidentified by the AnIDent kit, and the remainder yielded profile numbers that were not listed in the codebooks. The MICs of 11 antimicrobial agents including penicillin G, metronidazole, clindamycin, cefoxitin, cefotetan, imipenem, meropenem, amoxicillin-clavulanate, ampicillin-sulbactam, piperacillin-tazobactam, and vancomycin were determined by the agar dilution method. All C. perfringens strains were susceptible to all antimicrobial agents tested. Various levels of resistance to cefoxitin, cefotetan, and penicillin G were noted with C. ramosum, C. clostridioforme, and C. innocuum. In addition, resistance to clindamycin was noted with C. ramosum (5%) and C. innocuum (10%). Most strains of C. innocuum were only moderately susceptible to vancomycin (MIC at which 90% of strains are inhibited, 4 micrograms/ml).

Alexandrakis G. et al. *Shifting trends in bacterial keratitis in south Florida and emerging resistance to fluoroquinolones.* Ophthalmology. 2000; 107(8) : 1497-502.p Abstract: OBJECTIVE: To study the distribution, current trends, and patterns of resistance to antimicrobial agents of bacterial keratitis isolates in South Florida. DESIGN: Retrospective, observational, case series. PARTICIPANTS: The microbiology records of all patients with bacterial keratitis seeking treatment at the Bascom Palmer Eye Institute from January 1, 1990 through December 31, 1998 were reviewed. MAIN OUTCOME MEASURES: In vitro laboratory minimum inhibitory concentration testing of the corneal isolates to the fluoroquinolones (ofloxacin and ciprofloxacin) and to the aminoglycosides (tobramycin and gentamicin) was performed using the Vitek (Automatic Microbial System Biomerieux Vitek, Inc., Hazelwood, Missouri) method. RESULTS: During this 9-year period, 2920 consecutive corneal cultures were obtained, and a pathogen was recovered in 1468 cultures (50%). The number of corneal ulcers scraped, positive cultures, recovered bacterial isolates, and ratio of gram-positive to gram-neg-

ative isolates per year remained approximately equal throughout the study period. Staphylococcus aureus and Pseudomonas aeruginosa represented 19.4% and 25.7%, respectively, of the total bacterial isolates during this period. However, we documented a gradual increase in the number of S. aureus keratitis isolates (29% of gram-positive organisms in 1990 versus 48% in 1998, P = 0.01) coupled with a decrease in the number of P. aeruginosa isolates (54% of gram-negative organisms in 1990 versus 46% in 1998). A decrease in the incidence of contact lens-associated keratitis and P. aeruginosa isolates in this group of patients was documented. Serratia marcescens and P. aeruginosa were most commonly isolated in contact lens-associated keratitis (18% each). There was increasing laboratory resistance of S. aureus keratitis isolates to the fluoroquinolones (11% in 1990 to 28% in 1998), but resistance patterns to the aminoglycosides remained unchanged. There was a three-fold increase in the percentage of resistant S. aureus isolates to fluoroquinolones between 1990 and 1994 and between 1995 and 1998. Both fluoroquinolones and aminoglycosides exhibited low in vitro effectiveness against P. aeruginosa throughout the study period. CONCLUSIONS: The increased recovery of S. aureus keratitis isolates and decreased laboratory effectiveness against fluoroquinolones to these pathogens present an important therapeutic challenge.

Allen U.D. et al. *Risk factors for resistance to "first-line" antimicrobials among urinary tract isolates of Escherichia coli in children*. CMAJ. 1999; 160(10) : 1436-40.p Abstract: BACKGROUND: There are increasing concerns regarding antimicrobial resistance in Canada. Data are limited on the prevalence, patterns of resistance and risk factors associated with resistant organisms, including coliforms, in children. This study was done to address these issues as they relate to urinary tract isolates of Escherichia coli in a tertiary care pediatric centre in Ottawa. METHODS: A surveillance study was conducted from December 1992 to December 1994. Susceptibility testing of urinary tract isolates of E. coli was performed using a panel of antimicrobial agents. A case-control study was also conducted for subjects with isolates resistant to trimethoprim-sulfamethoxazole (T-S), this drug being used a representative "first-line" agent. RESULTS: A total of 1636 consecutive isolates were obtained from 967 subjects. Of the 1636 isolates, 736 (45.0%) were resistant to ampicillin, 514 (31.4%) were resistant to T-S, 363 (22.2%) were resistant to both ampicillin and T-S, and 27 (1.7%) were resistant to both ampicillin and gentamicin. In the case-control study 274 children with isolates resistant to T-S were matched with 274 children who had T-S-sensitive isolates obtained during the study period or the preceding or subsequent 6 months. Multivariate analyses indicated that subjects who had received antimicrobials for more than 4 weeks in the previous 6 months were about 23 times more likely to have isolates resistant to T-S than were subjects without this risk factor (odds ratio [OR] 23.4, 95% confidence interval [CI] 12.0-47.6). Children with genitourinary tract abnormalities were 2.4 times more likely to have resistant isolates than those without such abnormalities (95% CI 1.2-4.5). Compared with children who had no hospital admissions in the previous year, those with 1 admission in that period were more likely to have resistant isolates (OR 2.3, 95% CI 1.4-7.5), as were those with 2 or more admissions in that period (OR 3.2, 95% CI 1.1-4.8). Compared with children aged 2-6 years, children under 2 years of age were less likely to have resistant isolates (OR 0.3, 95% CI 0.2-0.8). INTERPRETATION: Selective antimicrobial pressure and multiple admissions to hospital were among the risk factors associated with antimicrobial resistance. The finding of a low but definite level of resistance to both ampicillin and gentamicin is important for the selection of empiric therapy for sepsis in neonates. The role of inexpensive first-line agents in the outpatient treatment and prevention of urinary tract infections requires re-examination, particularly in children who have recently received antimicrobial therapy.

Alliot C. et al. *Opportunistic infection with Rhodotorula in cancer patients treated by chemotherapy: two case reports.* Clin Oncol (R Coll Radiol). 2000; 12(2) : 115-7.p Abstract: Rhodotorula species are commensal yeasts of variable pathogenicity. The authors report the case histories of two patients presenting with febrile neutropenia. The first was a 3-year-old girl who had been treated with combination chemotherapy for a tumour of the posterior fossa. The second was a 46-year-old man who had received chemotherapy for lymphoplasmocytic lymphoma, followed by consolidation treatment with autologous bone marrow transplantation. Investigation revealed infection caused by Rhodotorula. The outcome was favourable after removal of the catheter in both patients. Rhodotorula species have been isolated during a variety of infectious complications. Almost all published cases of fungaemia concern patients with central venous catheters that have been in place over long periods, who have also been treated with broad spectrum antibiotics. Neoplasia represents the most frequent underlying disease. The pathogenicity of Rhodotorula species appears to be moderate in most cases; fungal therapy or the removal of infected catheters is generally effective. Nevertheless, Rhodotorula has been reported to provoke fatal endocarditis or meningitis and can probably cause septic shock.

Almeida R.C. et al. *[Evaluation and control of the microbiological quality of hands in foodhandlers].* Rev Saude Publica. 1995; 29(4) : 290-4.p Abstract: Microbiological analyses of workers' hands were made for the common indicators, including aerobic mesophilic plate counts (APC), as well as the common food pathogens. Opportunities were observed for cross-contamination of roast beef by workers' hands during slicing operations. Workers' hands showed APC counts of up to 10(7) CFU/hand and the presence of S. aureus and C. perfringens. Salmonella spp were not isolated from hands. These results show that handling of these foods by such workers would be a risk in transmitting pathogenic microorganisms to the foods and is apparent that it is necessary for these workers to take care of personal hygiene. Decimal reductions obtained in the microbiological counts after washing and antisepsis of workers' hands were at 2,6 logs cycles and still demonstrated the importance of this practice in food services by the fact that pathogens such as S. aureus and C. perfringens were inhibited or killed.

Alonso-Echanove J. et al. *Proficiency of clinical laboratories in Spain in detecting vancomycin-resistant Enterococcus spp. The Spanish VRE Study Group.* J Clin Microbiol. 1999; 37(7) : 2148-52.p Abstract: Studies in a variety of U.S. clinical laboratories have demonstrated difficulty in detecting intermediate and low-level vancomycin-resistant enterococci (VRE). The misclassification of "at least intermediate resistant isolates" as vancomycin susceptible may have both clinical implications and a negative impact on measures to control the spread of VRE. No published study has assessed the ability of clinical laboratories in Europe to detect VRE. So, the apparent low prevalence of VRE in European hospitals may be, in part, secondary to the inability of these laboratories to detect all VRE. In an effort to assess European laboratories' proficiency in detecting VRE, we identified 22 laboratories in Spain and asked them to test four VRE strains and one susceptible enterococcal strain from the Centers for Disease Control and Prevention collection. Each organism was tested by the routine antimicrobial susceptibility testing method used by each laboratory. Overall, VRE were correctly identified in 61 of 88 (69.1%) instances. The accuracy of VRE detection varied with the level of resistance and the antimicrobial susceptibility method. The high-level-resistant strain (Enterococcus faecium; MIC, 512 microg/ml) was accurately detected in 20 of 22 (91. 3%) instances, whereas the intermediate-resistant isolate (Enterococcus gallinarum; MIC, 8 microg/ml) was accurately detected in only 11 of 22 (50%) instances. Classification errors occurred in 27 of 88 (30.9%) instances. Misclassification as vancomycin susceptible was the most common error (16 of 27 [59.3%] instances). Our study shows that the participating Spanish laboratories had an overall acceptable proficiency in detecting VRE but that a substantial proportion of VRE isolates with low or intermediate levels of resistance were not detected. We recommend that studies be conducted to validate laboratory proficiency testing as an important step in the prevention and control of the spread of antimicrobial resistance.

Alou L. et al. *Efficacy of trovafloxacin in an in vitro pharmacodynamic simulation of an intraabdominal infection.* Int J Antimicrob Agents. 1999; 12(2) : 135-9.p Abstract: An in vitro model simulating trovafloxacin concentrations in human serum after standard doses was used to investigate the activity of this drug with time against Bacteroides fragilis, Escherichia coli, Enterococcus faecalis and Staphylococcus aureus. Antibiotic concentrations used for each incubation period were: 4.24 mg/l (0-1 h), 3.69 mg/l (1-3 h), 3.25 mg/l (3-6 h), 2.38 mg/l (6-8 h), 1.35 mg/l (8-24 h). A 99.9% initial inoculum reduction (> 3 log10 cfu/ml) was defined as bactericidal activity. Bactericidal activity against these organisms was obtained with trovafloxacin after the first hour of incubation, and similar activity was obtained against B. fragilis, E. faecalis and S. aureus after 3 h, when they were tested individually. When the strains were tested as mixed culture, there was bactericidal activity against E. coli after 1 h incubation and after 3 h for S. aureus. This activity was observed against B. fragilis and E. faecalis after 6 h incubation in the mixed culture assays and after 3 h when organisms were tested individually. Regrowth was not observed over a 24 h period. These data show that trovafloxacin might be effective in intraabdominal infections caused by mixed aerobic and anaerobic microorganisms.

Altamura M. et al. *2-Substituted penems with amino acid-related side chains: synthesis and antibacterial activity of a new series of beta-lactam antibiotics.* J Med Chem. 1995; 38(21) : 4244-56.p Abstract: A new series of 6-(hydroxyethyl)penems 2-substituted with amino acid-related side chains was synthesized. The nature of the amino acyl derivative proved to be crucial both from a synthetic point of view, as beta-lactam ring opening can compete with C-2 nucleophilic substitution, and for antibacterial activity. Primary amino acid amides emerged as the most suitable side chains for enhancing permeability through a Gram-negative outer membrane. In vitro activity of the new 2-[(aminoamido)methyl]penems 3a-u was influenced by the nature and position of the amide moiety, the ring size for cyclic amides, and the configuration of the amino acid. Compounds bearing amides derived from small N-methyl amino acids (such as 3a) or from cyclic amino acids (such as prolinamide 3p and 4-hydroxyprolinamide 3r) showed broad spectrum in vitro activity against both Gram-positive and Gram-negative microorganisms.

Altschuler M. et al. *Enfermedad invasiva por streptococcus pneumobniae: emergencia de cepas resistentes a penicilina.* Acta bioquim. clin. latinoam. 1998; 32(1) : 23-37.p Abstract: La enfermedad invasiva por S. pneumoniae es frecuente en la edad pediátrica. Se reseña la bibliografía internacional, en particular la referida a enfermedad por S. pneumoniae resistente a penicilina. Un estudio epidemiológico longitudinal prospectivo fue realizado en el Hospital de Niños Superiora Sor María Ludovica, La Plata, 1993-1995. Fueron estudiados por serotipo y sensibilidad a la penicilina 146 aislamientos de S. pneumoniae a partir de sangre, LCR y líquido pleural que correspondieron a 135 casos. Se analizaron las variables del huésped tales como género, edad, enfermedad de base, tratamiento antibiótico en los 30 días previos. Veintiún serotipos fueron identificados. Los más frecuentes fueron 14, 5 y 1. La resistencia de S pneumoniae a penicilina fue del 20,7 por ciento (AU).

Alvarado-Aleman F.J. *Flow cytometry evaluation of complement mediated bacterial membrane damage.* Arch Med Res. 1996; 27(4) : 459-63.p Abstract: The study of the complement-outer bacterial membrane interactions is gaining enthusiasm for applying a continuous development of more specialized techniques. In this paper a novel flow cytometry technique shows that highly fluorescent lucifer yellow-stained Neisseriae gonorrhoeae when exposed to the redox reaction of p-nitro blue chloride tetrazolium (NBT), as formazan precipitation takes place, a shift to lesser fluorescent channels of the histogram population occurs. That effect is labeled NBT-laser beam quenching (NBT-LBQ). A significant difference by Kolmogorov-Smirnov summation curve analysis is found between complement heat-inactivated and its counterpart assessed with normal complement microorganisms. The operation of this NBT-LBQ effect by microbial flow cytometry casts an interesting potential for the evaluation of the outer membrane-complement-interaction of serum sensitive microorganisms.

Alvarez A.J. et al. *PCR for bioaerosol monitoring: sensitivity and environmental interference.* Appl Environ Microbiol. 1995; 61(10) : 3639-44.p Abstract: The PCR technique has potential for use in detection of low concentrations of airborne microorganisms. In this study, the sensitivity of PCR and its susceptibility to environmental interference were assessed with Escherichia coli DH1 as the target organism. Air samples, containing environmental bioaerosols, were collected with AGI-30 samplers and seeded with E. coli DH1 cells. Parallel studies were performed with cells seeded into the sampler prior to collection of air samples to determine the effects of environmental inhibition and sampling stress on the PCR assay. Baseline studies were also performed without environmental challenge or sampling stress to compare two protocols for cell lysis, solid phase and freeze-thaw. Amplification of a plasmid target sequence resulted in a detection limit of a single bacterial cell by the freeze-thaw and solid-phase methods within 5 and 9 h, respectively. With a genomic target, the sensitivity of the solid-phase method was 10-fold lower than that of freeze-thaw. Samples which contained 10(3) to 10(4) CFU of environmental organisms per m3 inhibited amplification; however, a 1/10 dilution of these samples resulted in successful amplifications. No difference in sensitivity of the PCR assay was obtained as a result of sampling stress, although a 10-fold decrease in culturability was observed. A field validation of the protocol with genomic primers demonstrated the presence of airborne E. coli and/or Shigella spp. in outdoor samples. This study indicates that the PCR method for detection of airborne microorganisms is rapid and sensitive and can be used as an alternative method for air quality monitoring.

Alvarez-Elcoro S. et al. *The macrolides: erythromycin, clarithromycin, and azithromycin.* Mayo Clin Proc. 1999; 74(6) : 613-34.p Abstract: In addition to erythromycin, macrolides now available in the United States include azithromycin and clarithromycin. These two new macrolides are more chemically stable and better tolerated than erythromycin, and they have a broader antimicrobial spectrum than erythromycin against Mycobacterium avium complex (MAC), Haemophilus influenzae, nontuberculous mycobacteria, and Chlamydia trachomatis. All three macrolides have excellent activity against the atypical respiratory pathogens (C. pneumoniae and Mycoplasma species) and the Legionella species. Azithromycin and clarithromycin have pharmacokinetics that allow shorter dosing schedules because of prolonged tissue levels. Both azithromycin and clarithromycin are active agents for MAC prophylaxis in patients with late-stage acquired immunodeficiency syndrome (AIDS), although azithromycin may be the preferable agent because of fewer drug-drug interactions. Clarithromycin is the most active MAC antimicrobial agent and should be part of any drug regimen for treating active MAC disease in patients with or without AIDS. Although both azithromycin and clarithromycin are well tolerated by children, azithromycin has the advantage of shorter treatment regimens and improved tolerance, potentially improving compliance in the treatment of respiratory tract and skin or soft tissue infections. Intravenously administered azithromycin has been approved for treatment of adults with mild to moderate community-acquired pneumonia or pelvic inflammatory diseases. An area of concern is the increasing macrolide resistance that is being reported with some of the common pathogens, particularly Streptococcus pneumoniae, group A streptococci, and H. influenzae. The emergence of macrolide resistance with these common pathogens may limit the clinical usefulness of this class of antimicrobial agents in the future.

Alvarez-Lerma F. *Modification of empiric antibiotic treatment in patients with pneumonia acquired in the intensive care unit. ICU-Acquired Pneumonia Study Group.* Intensive Care Med. 1996; 22(5) : 387-94.p Abstract: OBJECTIVE: To assess the frequency of and the reasons for chang-

ing empiric antibiotics during the treatment of pneumonia acquired in the intensive care unit (ICU). DESIGN: A prospective multicenter study of 1 year's duration. SETTING: Medical and surgical ICUs in 30 hospitals all over Spain. PATIENTS: Of a total of 16,872 patients initially enrolled into the study, 530 patients developed 565 episodes of pneumonia after admission to the ICU. RESULTS: Empiric antibiotics were administered in 490 (86.7%) of the 565 episodes of pneumonia. The antimicrobials most frequently used were amikacin in 120 cases, tobramycin in 110, ceftazidime in 96, and cefotaxime in 96. Monotherapy was indicated in 135 (27.6%) of the 490 episodes, a combination of two antibiotics in 306 episodes (62.4%), and a combination of three antibiotics in 49 episodes (10%). The empiric antibiotic treatment was modified in 214 (43.7%) cases because of isolation of a microorganism not covered by treatment in 133 (62.1%) cases, lack of clinical response in 77 (36%), and development of resistance in 14 (6.6%). Individual factors associated with modification of empiric treatment identified in the multivariate analysis were microorganism not covered (relative risk (RR)) 22.02; 95% confidence interval (CI) 11.54 to 42.60; $p < 0.0001$), administration of more than one antimicrobial (RR 1.29; 95% CI 1.02 to 1.65; $p = 0.021$), and previous use of antibiotics (RR 1.22; 95% CI 1.08 to 1.39; $p = 0.0018$). Attributable mortality was 16.2% in patients with appropriate initial therapy and 24.7% in patients with inappropriate treatment ($p = 0.034$). CONCLUSIONS: A high percentage of patients (43.7%) required modification of empiric antibiotic treatment for pneumonia acquired in the ICU. In 62.1% of cases the main reason for changing antibiotic treatment was inadequate antibiotic coverage of microorganisms. Attributable mortality was significantly higher in patients with inappropriate initial antibiotic therapy. Rapid and accurate diagnostic methods are needed to initiate appropriate antibiotic treatment as soon as pneumonia is suspected.

Alvarez M. et al. *Antimicrobial susceptibility profiles of oropharyngeal viridans group streptococci isolates from cystic fibrosis and non-cystic fibrosis patients.* Microb Drug Resist. 1998; 4(2) : 123-8.p Abstract: The antimicrobial susceptibility profile of 77 oropharyngeal viridans streptococci isolates from 34 cystic fibrosis (CF) patients and 58 isolates from 43 healthy non-CF patients were studied by the E-test and the standard disk diffusion methods. Overall penicillin and cefotaxime resistances (intermediate plus resistant isolates) were significantly higher ($p < 0.05$) among CF isolates (72.7% and 45.5%, respectively) than among non-CF isolates (51.7% and 15.5%, respectively). No significant difference was observed in overall (intermediate plus resistant) erythromycin resistance rates, although high-level erythromycin resistance (> or =32 microg/mL) was more frequently found in CF isolates (24.6%) than in non-CF isolates (12.1%). An unexpected high percentage of isolates showed low level erythromycin resistance (MIC range, 0.5-15 microg/mL): 41.5% in cystic fibrosis and 46.5% in non-CF isolates. No significant differences were observed regarding the percentage of colonized patients with at least one penicillin-resistant isolate. On the contrary, colonization with cefotaxime ($p < 0.001$) or erythromycin ($p = 0.014$) resistant isolates were significantly more prevalent in CF patients. Similar tetracycline and chloramphenicol resistance rates were observed for both groups. Viridans isolates resistant to a single antibiotic were more prevalent among non-CF patients and multiple resistance was higher among CF patients. Prior antibiotic exposure could result in differences in beta-lactam resistance and colonization rates with resistant isolates between both groups. None of the non-CF patients was previously treated with antimicrobials for a period of three months before sampling. In contrast, 94.1% of CF patients were treated with antimicrobials within the same period; 65.6% with beta-lactam antibiotics. Patients with CF disease, frequently exposed to antimicrobials, may be a reservoir of viridans streptococci isolates with resistance determinants, particularly to beta-lactam antibiotics.

Alzugaray R. et al. *Yersinia enterocolitica O:3. Antimicrobial resistance patterns, virulence profiles and plasmids.* New Microbiol. 1995; 18(2) : 215-22.p Abstract: Antimicrobial resistance patterns (ARP), virulence profiles and plasmids in clinical isolates of Yersinia enterocolitica serotype O:3 were studied. The ARP was tested using the disk method. All strains were susceptible to amoxicillin/clavulanic acid, cefoxitin, fosfomycin, gentamicin, kanamycin, neomycin, tetracycline, nalidixic acid, norfloxacin, ciprofloxacin and trimethoprim. All of them presented resistance to ampicillin, all with the exception of one to cephalotin, differing in resistance or susceptibility to chloramphenicol, streptomycin (Sm), sulfadiazine (Sd) and cotrimoxazole. Due to these differences they were grouped into 8 ARP. Twenty-nine strains carried plasmids and were grouped into 5 plasmid profiles. All strains carrying 42 MDa plasmids were positive for virulence tests (calcium dependence, crystal violet binding, Congo red binding and autoagglutination). No correlation between ARP and plasmid profile was found, although small plasmids of 6.5 and 4.1 MDa mediated resistance to Sm-Sd, as was shown by transformation to Escherichia coli strains. DNAs from plasmids were analyzed by restriction enzymes. All 42 MDa plasmids showed identical EcoRI and HindIII profiles. The two 6.5 MDa plasmids showed identical BglII, AvaI and SalI restriction profiles and the four 4.1 Mda plasmids also yielded restriction profiles similar to each other, but different from the 6.5 ones.

Ambaye A. et al. *Comparison of agar dilution, broth microdilution, disk diffusion, E-test, and BACTEC radiometric methods for antimicrobial susceptibility testing of clinical isolates of the Nocardia asteroides complex*. J Clin Microbiol. 1997; 35(4) : 847-52.p Abstract: An evaluation was undertaken to determine the optimal method for the in vitro susceptibility testing of 26 Nocardia asteroides complex isolates to the following antimicrobial agents: amikacin, ampicillin, amoxicillin-clavulanate, ceftriaxone, ciprofloxacin, erythromycin, imipenem, minocycline, and trimethoprim-sulfamethoxazole. Five testing methods were studied including the agar dilution, broth microdilution, and disk diffusion methods, the epsilometer test (E-test), and the BACTEC radiometric method. Results for each antimicrobial agent and each testing method were interpreted as indicating susceptibility, intermediate susceptibility, or resistance according to current guidelines of the National Committee for Clinical Laboratory Standards (NCCLS) for bacteria that grow aerobically and were then compared to a "gold standard" susceptibility test result. The gold standard result for each Nocardia isolate was established by a consensus of the results of the majority of testing methods used in the study. When the results were combined for all antimicrobial agents tested against all Nocardia isolates by all methods, the BACTEC radiometric method produced the highest level of agreement (97.9%) with the consensus results and had the fewest very major (n = 1), major (n = 2), and minor (n = 2) errors. In contrast, the results of the agar dilution method were in least agreement (93.2%) with the consensus results, and this method also produced the most very major (n = 8), major (n = 4), and, along with the disk diffusion method, minor (n = 6) errors. For all test methods, interpretive errors were most frequent when testing ampicillin or amoxicillin-clavulanate. Moreover, for all Nocardia nova isolates tested, ampicillin susceptibility results by any of the testing methods were not in agreement with the results of testing for beta-lactamase by the nitrocefin (Cefinase) disk method. We conclude that among the methods evaluated, the BACTEC radiometric method appeared to be the best for determining the in vitro susceptibilities of members of the N. asteroides complex to a panel of nine antimicrobial agents. However, none of the test methods, including the BACTEC method, accurately predicted the ampicillin resistance of the N. nova isolates tested, all of which produced beta-lactamase. Presuming that this beta-lactamase hydrolyzes ampicillin, this disparity may relate to the NCCLS breakpoints that were used, which may require modification for this antimicrobial agent when tested against N. nova isolates.

Amir M. et al. *Nasopharyngeal carriage of Staphylococcus aureus and carriage of tetracycline-resistant strains associated with HIV-seropositivity.* Eur J Clin

Microbiol Infect Dis. 1995; 14(1) : 34-40.p Abstract: The aim of this prospective study was to investigate the relationship between carriage of antibiotic-resistant Staphylococcus aureus and infection with the human immunodeficiency virus (HIV). A total of 554 pernasal swabs was taken during a six-month period from 554 adult patients attending three outpatient clinics and from inpatients from a hospital in Nairobi, Kenya. Overall, 121 swabs (22%) yielded Staphylococcus aureus, there being significantly higher carriage in HIV-positive patients (71/264, 27%) than in HIV-negative patients (50/290, 17%); p = 0.008. Antimicrobial resistance rates were determined for 110 isolates and were high for penicillin (91%) and tetracycline (72%) and low for erythromycin (8%), methicillin (3%), gentamicin (5%) and chloramphenicol (0%). Genetic analysis showed plasmids in the range of 24-42 MDa to be associated with beta-lactamase production and plasmids in the range of 3-5 MDa to be associated with resistance to tetracycline, erythromycin and trimethoprim. All nine erythromycin-resistant strains were from HIV-positive patients (p = 0.02). There was a significant association of tetracycline resistance with HIV seropositivity (p = 0.002). The association of HIV seropositivity with Staphylococcus aureus carriage and carriage of antibiotic-resistant strains against the background of the HIV epidemic are of relevance in individual patient care and raise concern for public health.

Amon-Tanoh-Dick F. et al. *[Pleuropulmonary staphylococcal infection in newborn infants].* Sante. 1998; 8(4) : 307-9.p Abstract: Pulmonary pleural staphylococcal infection is common in sub-Saharan Africa. It is rare in temperate zones and occurs in different epidemiological conditions. In African regions, very few staphylococcal infections are hospital-acquired, with most cases resulting from infection in everyday life. Pulmonary pleural staphylococcal infection typically affects infants. The frequency of neonatal forms is unknown. We describe here in the epidemiological, clinical and therapeutic characteristics of a case of pulmonary pleural staphylococcal infection in a newborn. The symptoms of our patient were typical, involving predominantly mechanical and hematological problems. The prevention of infection in very young children and early treatment of such infections could reduce the morbidity of this disease.

Ampe F. et al. *Polyphasic study of the spatial distribution of microorganisms in Mexican pozol, a fermented maize dough, demonstrates the need for cultivation-independent methods to investigate traditional fermentations.* Appl Environ Microbiol. 1999; 65(12) : 5464-73.p Abstract: The distribution of microorganisms in pozol balls, a fermented maize dough, was investigated by a polyphasic approach in which we used both culture-dependent and culture-independent methods, including microbial enumeration, fermentation product analysis, quantification of microbial taxa with 16S rRNA-targeted oligonucleotide probes, determination of microbial fingerprints by denaturing gradient gel electrophoresis (DGGE), and 16S ribosomal DNA gene sequencing. Our results demonstrate that DGGE fingerprinting and rRNA quantification should allow workers to precisely and rapidly characterize the microbial assemblage in a spontaneous lactic acid fermented food. Lactic acid bacteria (LAB) accounted for 90 to 97% of the total active microflora; no streptococci were isolated, although members of the genus Streptococcus accounted for 25 to 50% of the microflora. Lactobacillus plantarum and Lactobacillus fermentum, together with members of the genera Leuconostoc and Weissella, were the other dominant organisms. The overall activity was more important at the periphery of a ball, where eucaryotes, enterobacteria, and bacterial exopolysacharide producers developed. Our results also showed that the metabolism of heterofermentative LAB was influenced in situ by the distribution of the LAB in the pozol ball, whereas homolactic fermentation was controlled primarily by sugar limitation. We propose that starch is first degraded by amylases from LAB and that the resulting sugars, together with the lactate produced, allow a secondary flora to develop in the presence of oxygen. Our results strongly suggest that cultivation-independent methods should be used to study traditional fermented foods.

Amrani M. et al. *Extension of native aortic valve endocarditis: surgical considerations.* Eur Heart J. 1995; 16 Suppl B : 103-6.p Abstract: Among 101 consecutive patients operated on for native infective aortic valve endocarditis (53 males, 48 females, mean age 39 years), 69 presented various forms of infectious extension to the surrounding areas. Twenty-six lesions were noted in the aortic roots: 18 annular abscesses, one abscess of the Valsalva sinus and seven aortic wall destructions. Among the subaortic valve pathology, 27 cases of septal lesions were noted and in one case the mitral fibrous trigone was involved. The mitral apparatus was infected in 26 cases, the tricuspid valvule in one case. Both tricuspid and mitral valvular replacements had to be performed in five cases. Among the 16 postoperative atrioventricular blocks, 14 needed a pacemaker. The most frequent causative microorganisms were Staphylococcus aureus and Streptococcus. Surgical management of the lesions consisted of extensive debridement followed by either simple repair of defects or complex reconstructions involving pericardial or synthetic patches or other more complex operations. Early and late mortality rates were 8.5% and 16%; early and late reoperation rates were 6% and 9.5%, respectively. The mean follow-up time was 148 months (12-265 months) with a survival rate of 74% (SE: +/- 0.08) at 10 years. We conclude that, although surgical correction of infective endocarditis may need a complex approach, it provides good results with an acceptable surgical risk.

Andersen B.M. et al. *A three-year survey of nosocomial and community-acquired infections, antibiotic treatment and re-hospitalization in a Norwegian health region.* J Hosp Infect. 2000; 44(3) : 214-23.p Abstract: In Norway, hospital-acquired infections (HAI) were analysed by repeated point prevalence studies (four each year) performed simultaneously at 14 hospitals in a health region (860,000 inhabitants) during the period 1996-1998. The study included 3200 beds and 121,000 discharged patients each year, and was initiated by and co-ordinated from the regional university hospital; Ulleval University Hospital (UHH). An overall prevalence rate of HAI of 6.5% (interhospital variation 1.4-11.7%) was found for the 32,248 patients studied. The rate of HAI was reduced from 7.7% in 1996 to 5. 9% in 1998. Smaller hospitals (<200 beds) generally had lower rates of HAI, community acquired infections (CAI), postoperative infections and use of antibacterial agents, than the large regional hospital (1200 beds). HAI was reduced in non-operated patients from 5.8% in 1996 to 4.4% in 1998 and in operated patients from 13.2% in 1996 to 10.5% in 1998. The risk of developing HAI was twice as high after surgery. From 1996 to 1998 there was a reduction in: urinary tract infections from 2.4% to 1.7%, lower respiratory tract infections from 1.5% to 0.8% and postoperative wound infections from 5.7% to 4.3%, while septicaemia (from 0.5% to 0.4%) remained unchanged. Re-hospitalization because of HAI was registered in 0.6% (interhospital variation 0.3-1.1%) of patients. The CAI rate in hospitals increased from 8.3% in 1996 to 10.8% in 1998. Approximately 16% (variation:14.4-20.6%) of the patients had an infection. The total use of antibacterial agents was 19.2% in 1996, 16.6% in 1997 and 17.8% in 1998 (variation: 14.9-23%). Copyright 2000 The Hospital Infection Society.

Anderson R.L. et al. *Susceptibility of vancomycin-resistant enterococci to environmental disinfectants.* Infect Control Hosp Epidemiol. 1997; 18(3) : 195-9.p Abstract: OBJECTIVE: To determine the susceptibilities of vancomycin-resistant and -sensitive enterococci (VRE and VSE) to various concentrations of commonly used, commercial, hospital-grade disinfectants. DESIGN: A microbial suspension test using inocula of 10(8) cells per mL in a disinfectant test dilution was used to determine inactivation kinetics of the test strains. In each test, 1-mL aliquots were removed from the cell-disinfectant mixtures at 15 and 30 seconds and then at 1-minute intervals for 5 minutes and neutralized. Appropriate serial dilutions were plated on agar medium for enumeration of survivors. RESULTS: VRE and VSE challenge inocula (in the absence of any additional protein or serum challenge) were below the limit of detection (5 colony-forming units/mL) after

15 seconds' exposure to the manufacturers' suggested use-dilutions of quaternary ammonium, phenolic, or iodophor germicidal detergents. In subsequent tests, when the disinfectants were diluted far beyond-the recommended use-dilutions (extended dilution), no differences were demonstrated between the susceptibilities ofVRE and VSE. CONCLUSIONS: VRE and VSE are sensitive to a spectrum of commonly used environmental disinfectants and have parallel inactivation rates when challenged with extended dilutions of these products. Our findings did not demonstrate a relationship between antibiotic and germicide resistance. Routine disinfection and housekeeping protocols presently used in hospitals need not be altered due to concerns about the potential for environmentally mediated transmission of antibiotic-resistant microorganisms.

Andremont A. *[Consequences of antibiotic therapy to the intestinal ecosystem].* Ann Fr Anesth Reanim. 2000; 19(5) : 395-402.p Abstract: Ecological impact of antibiotherapy results from the interaction between microorganisms in the ecosystems and antibiotics at which they are exposed. The amount of antibiotics use in the world is continuously increasing. The fraction devoted to human care is only about half the total amount. There are multiple other fields of usage, in agriculture, breeding and veterinary medicine. Bacterial ecosystems exposed at antibiotherapy in man are mainly the skin and the gastrointestinal and respiratory tracts. The gastrointestinal system is quantitatively predominant and the consequences of the bacterial imbalance induced by antibiotics are potentially severe. It is the reason why it is the most extensively studied, in the literature and in the present review. The origin of resistant bacteria will be briefly discussed.

Andres M.T. et al. *Antimicrobial susceptibilities of Porphyromonas gingivalis, Prevotella intermedia, and Prevotella nigrescens spp. isolated in Spain.* Antimicrob Agents Chemother. 1998; 42(11) : 3022-3.p Abstract: The susceptibilities of 143 Porphyromonas gingivalis, Prevotella intermedia, and Prevotella nigrescens isolates to 18 antimicrobial agents were tested. All P. gingivalis isolates were susceptible. In contrast, some Prevotella spp. (17%) were resistant to beta-lactams, erythromycin, clindamycin, or tetracycline and carried resistance genes, ermF or tetQ, or beta-lactamases.

Andrews J. et al. *Antimicrobial resistance in gram-positive pathogens isolated in the UK between October 1996 and January 1997.* J Antimicrob Chemother. 1999; 43(5) : 689-98.p Abstract: Antimicrobial resistance in gram-positive pathogens from 30 centres in the UK (ten Teaching, ten Associate Teaching and ten District General Hospitals) was studied over a 4 month period between October 1996 and January 1997. High-level resistance (HLR) and low-level resistance (LLR) to penicillin amongst pneumococci was 3.3% and 3.4%, respectively. However, considerable variation in resistance rates was observed depending on geographical location (LLR range 0-15.4% and HLR range 0-30.8%). Considerable variation in resistance rates was also observed for Staphylococcus aureus to methicillin, with rates ranging from 0% to 56.7% depending on locality. Using conventional MIC methodology, none of the isolates of S. aureus was considered as having reduced sensitivity to vancomycin. However, eight isolates grew on Brain Heart Infusion Agar containing vancomycin (4 mg/L) after prolonged incubation and are therefore worthy of further investigation by electron microscopy. With Enterococcus faecalis, resistance rates were similar between the three types of hospital and only four isolates were considered resistant to glycopeptide antibiotics (one vanA and three vanB phenotype).

Andrews J. et al. *A comparison of antimicrobial resistance rates in Gram-positive pathogens isolated in the UK from October 1996 to January 1997 and October 1997 to January 1998.* J Antimicrob Chemother. 2000; 45(3) : 285-93.p Abstract: Rates of resistance for two consecutive years for 28 centres (10 Teaching, nine Associate Teaching and nine District General hospitals) in the UK were compared. Combined rates of resistance for each of the hospital types of Staphylococcus aureus to methicillin revealed an increase in the rate of resistance in Teaching hospitals (12.5% year 1, 23.5% year 2), but, for Associate Teaching and District General hospitals rates fell (Associate Teaching 19.1% year 1, 11.9% year 2; District General 16.5% year 1 and 11.3% year 2). Using conventional methodology to determine MICs, no strain was considered to have reduced susceptibility to vancomycin. Among coagulase-negative staphylococci, increased resistance was observed for Staphylococcus epidermidis to rifampicin, for Staphylococcus haemolyticus to clindamycin, for Staphylococcus saprophyticus to penicillin and for Staphylococcus spp. to clindamycin, methicillin and rifampicin. For Streptococcus pneumoniae an upward trend in low-level resistance to penicillin was observed (18 of the 28 centres), however, for high-level resistance the trend was in the opposite direction (only four centres showed an increase). For Enterococcus faecalis there was a trend to a fall in levels of resistance, the only exception being an increase in high-level gentamicin resistance (10.5% year 1, 15.1% year 2, P = 0.0388). For Enterococcus faecium rates of resistance were not significantly different except for increases in resistance to nitrofurantoin and rifampicin.

Andrews J.M. et al. *Concentrations of trovafloxacin in bronchial mucosa, epithelial lining fluid, alveolar macrophages and serum after administration of single or multiple oral doses to patients undergoing fibre-optic bronchoscopy.* J Antimicrob Chemother. 1997; 39(6) : 797-802.p Abstract: Concentrations of trovafloxacin were measured in serum, alveolar macrophages, epithelial lining fluid and bronchial mucosa following single and multiple oral doses. Concentrations were determined using a microbiological assay method. There were 18 subjects in the single dose and nine subjects in the multiple dose groups. After single dosing, mean concentrations in serum, alveolar macrophages, epithelial lining fluid and bronchial mucosa at 6, 12 and 24 h were as follows: 6 h, 1.41 mg/L, 19.06 mg/L, 3.01 mg/L and 1.52 mg/kg; 12 h, 0.85 mg/L, 16.22 mg/L, 4.8 mg/L and 1.01 mg/kg; 24 h, 0.37 mg/L, 10.23 mg/L, 0.93 mg/L, and no measurable concentration, respectively. After multiple dosing (approximately 6 h post-dose) the corresponding concentrations were 1.47 mg/L, 34.3 mg/L, 10.21 mg/L and 1.67 mg/kg, respectively. These concentrations exceed the MIC90s for the common respiratory pathogens, Haemophilus influenzae 0.06 mg/L, Moraxella catarrhalis 0.008 mg/L and Streptococcus pneumoniae 0.12 mg/L and suggest that trovafloxacin should be efficacious in the treatment of community- and hospital-acquired respiratory infections.

Andrews J.M. et al. *Concentrations of levofloxacin (HR 355) in the respiratory tract following a single oral dose in patients undergoing fibre-optic bronchoscopy.* J Antimicrob Chemother. 1997; 40(4) : 573-7.p Abstract: Concentrations of levofloxacin were measured in bronchial biopsies, alveolar macrophages (AM), epithelial lining fluid (ELF) and serum following a single oral dose. Concentrations were measured by a microbiological assay method. A total of 35 patients undergoing fibre-optic bronchoscopy were studied. Mean serum, AM, ELF and biopsy concentrations were as follows. 0.5 h: 4.73 mg/L, 19.1 mg/L, 4.74 mg/L and 4.3 mg/kg; 1 h: 6.6 mg/L, 32.5 mg/L, 10.8 mg/L and 8.3 mg/kg; 2 h: 4.9 mg/L, 41.9 mg/L, 9.0 mg/L and 6.5 mg/kg; 4 h: 4.1 mg/L, 27.7 mg/L, 10.9 mg/L and 6.0 mg/kg; and 6-8 h: 4.0 mg/L, 38.4 mg/L, 9.6 mg/L and 4.0 mg/kg respectively. Mean serum and AM concentrations at 12-24 h were 1.2 and 13.9 mg/L respectively (concentrations in biopsy and ELF were only measurable in three of the six patients). These concentrations exceed the MIC90s of the common respiratory pathogens, Haemophilus influenzae (0.015 mg/L), Moraxella catarrhalis (0.06 mg/L) and Streptococcus pneumoniae (1 mg/L) and suggest that levofloxacin should be efficacious in the treatment of community- and hospital-acquired respiratory infection.

Andrews R.T. et al. *How much guidewire is too much? Direct measurement of the distance from subclavian and internal jugular vein access sites to the superior vena cava-atrial junction during central venous catheter placement.*

Crit Care Med. 2000; 28(1) : 138-42.p Abstract: OBJECTIVE: The introduction of excessive lengths of guidewire during placement of central venous catheters from the internal jugular vein (IJV) or the subclavian vein (SCV) can result in rare but significant complications. To identify a "safe" guidewire insertion length, the authors performed direct intravascular measurement of the distance from these venous access sites to the superior vena cava-atrial junction (CAJ), and evaluated these distances relative to the patients' height, weight, sex, and chest radiographs. DESIGN: Prospective, nonrandomized observation. SETTING: The Interventional Radiology Department of a tertiary care referral hospital. PATIENTS: 100 adults (45 women, 55 men) evaluated during fluoroscopically directed central venous catheter placement. INTERVENTIONS: None. MEASUREMENTS AND MAIN RESULTS: The distance from the IJV or SCV access site was directly measured using fluoroscopy and an intravascular guidewire. 40 right IJVs, 31 right SCVs, 16 left SCVs, and 13 left IJVs were studied. Comparative measurements from the postprocedure radiograph were made in 20 of these cases. All measurements were correlated with patient sex, height, and weight. The mean distance from all access sites to the superior vena cava-atrial junction was 18.0 cm. The right IJV distance was the shortest, averaging 16 cm. The left SCV distance was the longest, averaging 21.2 cm. Right SCV and left IJV distances were 18.4 and 19.1 cm, respectively, but this difference was not statistically significant. Weight and radiographic measurements did not correlate with the measured vascular distance, although there was a trend toward longer distances in taller patients and males. CONCLUSIONS: Patient height, weight, and measurements from previous chest radiographs are less reliable in predicting a safe wire length than is the access site selected. In most cases, 18 cm should be considered the upper limit of guidewire introduced during central catheter placement in adults. The guidewires supplied in catheter kits should have lengths correlated to those of the catheters, and should have distance markings printed upon them.

Andriole V.T. *The future of the quinolones.* Drugs. 1999; 58 Suppl 2 : 1-5.p Abstract: This review emphasises the advances in the development of newer quinolones: their broader antimicrobial activity particularly their increased activity against Pneumococcus and anaerobes; their longer half-life and tissue penetration including activity in cerebrospinal fluid; and their excellent efficacy in respiratory, intra-abdominal, pelvic, and skin and soft tissue infections. Also, considerable progress has been made in our understanding of the development of bacterial resistance to the newer quinolones. Additional advances in quinolone development are likely to provide better compounds for clinical use.

Andropoulos D.B. et al. *The effects of transesophageal echocardiography on hemodynamic variables in small infants undergoing cardiac surgery.* J Cardiothorac Vasc Anesth. 2000; 14(2) : 133-5.p Abstract: OBJECTIVE: To assess the effects of transesophageal echocardiography (TEE) on hemodynamic variables during cardiac surgery in small infants. DESIGN: A prospective clinical study. SETTING: A medical college-affiliated tertiary care children's hospital. PARTICIPANTS: Twenty-three infants weighing 2 to 5 kg undergoing cardiac surgery. INTERVENTIONS: Baseline heart rate, arterial pressure, and central venous pressure were recorded. A pediatric TEE probe was inserted, and the hemodynamic variables were again recorded. Postoperatively the hemodynamic measurements were measured again before and after probe removal, with the addition of left atrial pressure and pulmonary artery pressure when available. Hemodynamic parameters were carefully observed during all phases of the TEE examinations for any changes attributable to probe manipulation. MEASUREMENTS AND MAIN RESULTS: No statistically significant changes occurred in this group of patients during TEE. No clinically significant changes in any individual patient occurred during the measurement or during manipulation of the TEE probe for the complete examination. CONCLUSION: Although hemodynamic compromise can occur in small infants, this study suggests that it is infrequent. Fear of hemodynamic compromise should not prevent use of intraoperative TEE in small infants when otherwise indicated.

Anglim A.M. et al. *Effect of a vancomycin restriction policy on ordering practices during an outbreak of vancomycin-resistant Enterococcus faecium.* Arch Intern Med. 1997; 157(10) : 1132-6.p Abstract: BACKGROUND: With the development of nosocomial pathogens that are resistant to multiple antimicrobial agents, reasonable restriction of antibiotic use has become a priority. METHODS: During an outbreak of vancomycin-resistant enterococcal infections, an audit of vancomycin hydrochloride use was conducted during October 3 through 21, 1994, and January 24 through February 2, 1995. During these periods, all orders for vancomycin were reviewed by clinical pharmacists. Use was classified as either appropriate or inappropriate based on recommendations by the Hospital Infection Control Practice Advisory Committee (HICPAC) of the Centers for Disease Control and Prevention, Atlanta, Ga. A policy restricting the use of vancomycin was adopted in November 1994. RESULTS: During the first audit in October 1994, 61% of vancomycin orders were considered inappropriate according to HICPAC criteria. At the time of this audit, the first cases of an outbreak of nosocomial vancomycin-resistant Enterococcus faecium had been detected. The follow-up audit showed that 30% of vancomycin orders were inappropriate by HICPAC criteria ($P < .001$). Overall use of vancomycin decreased by 50% and remained at this lower level for the following year. CONCLUSION: The institution of a vancomycin restriction policy was associated with a reduction of both inappropriate drug orders and total use.

Angulo F.J. et al. *Origins and consequences of antimicrobial-resistant nontyphoidal Salmonella: implications for the use of fluoroquinolones in food animals.* Microb Drug Resist. 2000; 6(1) : 77-83.p Abstract: Human Salmonella infections are common; most infections are self-limiting, however severe disease may occur. Antimicrobial agents, while not essential for the treatment of Salmonella gastroenteritis, are essential for the treatment of thousands of patients each year with invasive infections. Fluoroquinolones and third-generation cephalosporins are the drugs-of-choice for invasive Salmonella infections in humans; alternative antimicrobial choices are limited by increasing antimicrobial resistance, limited efficacy, and less desirable pharmacodynamic properties. Antimicrobial-resistant Salmonella results from the use of antimicrobial agents in food animals, and these antimicrobial resistant Salmonella are subsequently transmitted to humans, usually through the food supply. The antimicrobial resistance patterns of isolates collected from persons with Salmonella infections show more resistance to antimicrobial agents used in agriculture than to antimicrobial agents used for the treatment of Salmonella infections in humans. Because of the adverse health consequences in humans and animals associated with the increasing prevalence of antimicrobial-resistant Salmonella, there is an urgent need to emphasize non-antimicrobial infection control strategies, such as improved sanitation and hygiene, to develop guidelines for the prudent usage of antimicrobial agents, and establishment of adequate public health safeguards to minimize the development and dissemination of antimicrobial resistance and dissemination of Salmonella resistant to these agents.

Angulo M. et al. *Dental caries and caries-associated microorganisms in Uruguayan preschool children.* Acta Odontol Scand. 1999; 57(6) : 301-5.p Abstract: The prevalence of dental caries was studied in 3-5-year-old Uruguayan children (n = 76) living in 2 areas with different socioeconomic and cultural conditions. More children from the low socioeconomic area of Las Acacias had caries (68%) than children from the middle- to high-class neighborhood of Pocitos (19%). They also had poorer oral hygiene and a significantly higher caries prevalence ($P < 0.05$) than those from Pocitos. The occurrence of mutans streptococci and lactobacilli was determined in whole unstimulated saliva and compared with that in debris collected with

a loop from the dorsum of the tongue. Mutans streptococci were detected in 42% of the children with significant correlations between the salivary levels of the microorganism and caries experience. Lactobacilli were recovered less frequently (18%). The detection of mutans streptococci in the tongue-loop samples was significantly correlated with that in whole saliva.

Ani A.E. et al. *Antimicrobial susceptibility test of Helicobacter pylori isolated from Jos, Nigeria.* Trans R Soc Trop Med Hyg. 1999; 93(6) : 659-61.p Abstract: Fifty-five strains of Helicobacter pylori isolated from November 1997 until October 1998 from 33 female and 22 male adults attending for endoscopy at the Evangel Hospital, Jos, Nigeria were assayed for antibiotic susceptibility to amoxycillin, clarithromycin, metronidazole and tetracycline by the E-test strip method. Minimum inhibitory concentration (MIC) within the attainable peak serum concentrations for each drug was used as the parameter to determine the susceptibility of H. pylori. The results showed 100% susceptibility for amoxycillin, 89.0% for tetracycline, 87.3% for clarithromycin and 60% for metronidazole. The MIC50 and MIC90 values were: 0.016 microgram/mL and 0.75 microgram/mL for amoxycillin, 0.016 microgram/mL and 2 micrograms/mL for clarithromycin, 0.094 microgram/mL and 12 micrograms/mL for tetracycline, and 2 micrograms/mL and > 48 micrograms/mL for metronidazole. The MIC90 values for metronidazole (> 48 micrograms/mL) and tetracycline (12 micrograms/mL) were in each case higher than the break-point value (peak serum concentrations) of 8 micrograms/mL for metronidazole and 3 micrograms/mL for tetracycline. This pattern of resistance to metronidazole and tetracycline has to be considered when therapeutic regimens against H. pylori contain either or both drugs.

Ansari M.Z. et al. *Nosocomial infection indicators in Australian hospitals: assessment according to hospital characteristics.* J Qual Clin Pract. 1997; 17(2) : 73-82.p Abstract: The relationship of bed size and hospital type (private or public) was studied using Hospital-Wide Medical Indicator data on nosocomial infections submitted to the Australian Council on Healthcare Standards Care Evaluation Program by hospitals presenting voluntarily for accreditation in 1993. The aim was to determine if this process could simplify the establishment of hospital peer groups for comparison of risk in the absence of knowledge of patient illness severity indices. After adjusting for potential confounders in a logistic model, hospital type was found to be a significant predictor for the occurrence of infection in clean and contaminated wounds. Bed size was a significant predictor for the occurrence of hospital-acquired bacteraemia in private and public hospitals. The increase in the risk of developing hospital acquired bacteraemia with increasing number of beds was significant as a trend ($P < 0.0001$) in private as well as public hospitals. The results suggest that hospital type and bed size are initial indices for 'flagging' peer group variation and prompting a more detailed internal review.

Antonova L.V. et al. *[The immune status of patients with acute inflammatory diseases of adnexa uteri associated with different combinations of microorganisms].* Zh Mikrobiol Epidemiol Immunobiol. 1996; (1) : 49-53.p Abstract: The immune status of 130 patients with acute inflammatory diseases of uterine appendages was studied. As etiologically associated infective agents detected in these patients were opportunistic microorganisms (group 1), Neisseria gonorrhoeae in combination with opportunistic microorganisms (group 2) and Chlamydia trachomatis in combination with opportunistic microorganisms (group 3). In all three groups of patients the response of T lymphocytes to PHA and hyperactivation of the B-cell element of immunity (an increase in the relative number of B-lymphocytes and the content of IgA and IgM in the serum) was found to be suppressed. In addition, in groups 1 and 3 an increase, and in group 2 a decrease in IgG were detected. In the mucus of the cervical canal in the patients of groups 1, 2 and 3 IgM was detected, while in patients of groups 2 and 3 a decrease in sigA was established.

Antonyraj K.J. et al. *Bactericidal activity and poly-L-proline II conformation of the tandem repeat sequence of human salivary mucin glycoprotein (MG2).* Arch Biochem Biophys. 1998; 356(2) : 197-206.p Abstract: The tandem repeat 23-residue sequence [TRS23 (145-167):T-T-A-A-P-P-T-P-S-A-T-T-P-A-P-P-S-S-S-A-P-P-E] of human salivary mucin glycoprotein MG2 was examined for its in vitro bactericidal activity against four oral microorganisms, Actinobacillus actinomycetemcomitans, Porphyromonas gingivalis, Streptococcus gordonii, and Streptococcus mutans. The conformational features of the proline-rich peptide were determined by circular dichroism (CD) and 600 MHz two-dimensional (2D) nuclear magnetic resonance (NMR) in aqueous solution. The strains of P. gingivalis (W50 and 381), A. actinomycetemcomitans (Y4 and 67), S. gordonii (DL1), and S. mutans (GS5) are highly sensitive to this peptide at 1.5-3.0 microM concentrations, suggesting that the proline-rich repeat sequence is a potent bactericidal agent for oral pathogens. The assignment of backbone and side-chain proton resonances was accomplished by the combined analysis of 2D total correlated spectroscopy and nuclear Overhauser effect spectroscopy. The temperature dependence of amide NH chemical shifts and the 1H-2H exchange effect on amide NH resonances suggest the absence of intramolecularly hydrogen-bonded NH groups. The coupling constant (JNH-CalphaH) values, conformational restriction offered by the proline residues (phi = -60 degrees +/- 15 degrees), the set of medium- and short-range nuclear Overhauser effects observed for this sequence, and the results of restrained structure calculation using DIANA, the distance geometry algorithm for NMR applications, provide evidence for the existence of a significant population of poly-L-proline II-type helices in aqueous solution. The CD spectra of the peptide in phosphate buffer (pH 7.2) and in methanol are reminiscent of the CD spectrum of the poly-L-proline II helical conformation and are consistent with the NMR data. The bactericidal activity of the proline-rich repeat sequence suggests that bacterial colonization, facilitated by the adsorbed salivary mucins on tooth surface, could be partly controlled and cleared by proteolytically degraded proline-rich peptides of MG2 in saliva before the colonized organisms turn into pathogens. It appears that the poly-L-proline II helix is the biologically active backbone conformation for bactericidal activity of the tandem repeat sequences of salivary MG2. Copyright 1998 Academic Press.

Aparicio J. et al. *Los Germenes causantes de Infecciones Urinarias y su Sensibilidad a los Antibioticos en Santa Cruz, Bolivia.* Bol. cient. CENETROP. 1997; 16(1) : 37-41.p Abstract: Para actualizar los conocimientos sobre agentes causales de las infecciones Urinarias (IU) en neustro medio y sus patrones de resistencia a los antibioticos, se ha realizado un analisis secundario de todos los resultados de urocultivos y antibiogramas efectuados en el centro Nacional de Enfermedades Tropicales (CENETROP) de la ciudad de Santa Cruz, Bolivia, durante el periodo de enero 1990 a junio 1995. De 912 muestras, 240 (26 por ciento) fueron positivas. De 578 muestras, correspondientes a mujeres, (33 por ciento) fueron positivas y de 334 muestras, correspondientes a varones, 44 (14 por ciento) fueron positivas. La Escherichia coli fue la bacteria aislada con mayor frecuencia en las Infecciones Urinarias, tanto en mujeres (71 por ciento) como en varones (52 por ciento). Los otros agentes fueron aislados con frecuencia bajas. la mayoria de la Escherichia coli aislada fueron resistente a la Ampicilina (75 por ciento) y al Trimetoprim sulfametoxazol (65, los otros agentes bacterianos tambien presentaron alta resistencia a estos antibioticos. Por lo tanto se concluye que la ampicilina y el Trimetoprim sulfametoxazol, en nuestro medio y en el momento actual tienen menor utilidad en tratamiento de las IU. Por el contrario, la nitrofurantoina presento baja resistencia (9 por ciento) y ademas que es una droga de bajo costo. Se puede recomendar como tratamiento de primera intencion. Se sugiere finalmente instituir mecanismos de vigilancia de labaratorio de las IU para seguir la tendencia de resistencia de los microorganismos a los antimicrobianos (AU).

Appelgren P. et al. *Surface heparinization of central venous catheters reduces microbial colonization in vitro and in vivo: results from a prospective, randomized trial*. Crit Care Med. 1996; 24(9) : 1482-9.p Abstract: OBJECTIVE: To evaluate in vitro and in vivo the efficacy of covalent end point-attached heparin to single-lumen polyurethane central venous catheters in reducing microbial adherence and colonization. DESIGN: In vitro study: A controlled bench study. In vivo study: A prospective, randomized, double-blind, clinical trial. SETTING: Intensive care unit in a 1200-bed teaching hospital. INTERVENTIONS: In vitro study: Adhesion of 17 radiolabeled clinical isolates of Staphylococci to catheters was examined in vitro. In vivo study: The outcome of heparinized and control catheters was compared in vivo in patients receiving long-term parenteral nutrition. Fifty-five adult patients were prospectively, blindly randomized to heparinized or control central venous catheters. The catheters, removed on clinical grounds, were analyzed with semiquantitative and quantitative cultures. Blood cultures were done at catheter removal. MEASUREMENTS AND MAIN RESULTS: In vitro study: Coagulase-negative Staphylococci adhered less in vitro to heparinized catheters than to control catheters ($p < .05$). In vivo study: Among 32 central venous catheters, or patients who completed the study, catheter-associated bacteremia or fungemia was observed in five patients in the control group ($n = 19$) and in no patient with a heparinized catheter ($n = 13$) ($p = .047$). Four of 13 catheters in the heparin group were colonized compared with 14 of 19 in the control group ($p = .03$). Coagulase-negative Staphylococci were the most frequent microorganisms in both groups. The numbers of organisms found on colonized catheters were larger in the control group than in the heparin group. CONCLUSIONS: Covalent end point surface heparinization appears to have a great impact on both in vitro and in vivo bacterial colonization of central venous catheters. Such heparinization can be a practical and economical approach to the prevention of catheter-associated bacteremia or fungemia.

Araj G.F. et al. *Drug-resistant Streptococcus pneumoniae in the Lebanon: implications for presumptive therapy.* Int J Antimicrob Agents. 1999; 12(4) : 349-54.p Abstract: A total of 50 consecutive clinical isolates of Streptococcus pneumoniae, collected between 1996 and 1998, were tested against six antimicrobial agents using the E-test. The percentages of fully resistant (R) and intermediately-R strains, respectively, were: benzyl penicillin 18 and 38%, amoxycillin-clavulanate 6 and 12%, cefuroxime 22 and 16%, ceftriaxone 2 and 16%, and clarithromycin 10%. Fully and or intermediately multidrug-resistance (two or more drugs) was seen in 44% of the isolates, 18% being fully resistant. The MIC breakpoint for cefaclor is not defined by the National Committee for Clinical Laboratory Standards (NCCLS) but MICs showed that: 76% of the isolates had an MIC of < or = 8 mg/l, 4% had an MIC of 16 mg/l and 20% had an MIC of > or = 32 mg/l. There was agreement between the E-test Pen MIC results and the 1 microg oxacillin (oxa) disk diffusion screen test for the 22 susceptible and the nine fully R strains but not for the 19 strains with Pen MICs between 0.1 and 1 mg/l; this shows the importance of MIC determination in such isolates. Penicillin and multiply antibiotic-resistant pneumococci are spreading in Lebanon, emphasizing the necessity to reconsider current treatment regimens in this country.

Arakawa Y. *[Epidemiology of drug-resistance and clinical microbiologists in the 21st century].* Rinsho Byori. 2000; Suppl 111 : 1-8.p Abstract: Many efficacious antimicrobial agents have been developed in the latter half of the 20th century, and this has enabled us to overcome bacterial infections. However, various drug-resistant bacteria including MRSA and VRE have been emerging and these strains will cause serious life-threatening medical problems in the 21st century. Since development of new antimicrobial agents currently stagnates++, promoting the appropriate and prudent use of antimicrobial agents based on EBM is strongly recommended. Thus, establishment of a surveillance system of drug-resistant bacterial infections and their epidemiology as well as further activities by clinical technologists as specialists in medical microbiology will be indispensable in the next century.

Arakawa Y. *[Gene examination methods (detection and genotyping of resistant genes)—multiple-drug-resistant Pseudomonas aeruginosa].* Rinsho Byori. 2000; Suppl 111 : 100-8.p Abstract: Pseudomonas aeruginosa has been regarded as one of the most stubborn pathogens that easily acquire resistance to various antimicrobial agents. Recently, several clinical isolates that have acquired multiple-resistance to carbapenems, fluoroquinolones, and newly developed aminoglycosides such as amikacin have been reported. Thus, the "drug-resistant P. aeruginosa" was designated as a "class 4 pathogen" in the new "Law Concerning the Prevention of Infectious Diseases and Medical Care for Patients with Infections" in Japan. It is generally considered that no medical facility can escape from severe attack by both multiple-drug resistant gram-positive cocci such as MRSA and gram-negative rods including P. aeruginosa in the 21st century. Therefore, emergency countermeasures should be anticipated to prevent further proliferation of these multiple-drug resistant pathogens.

Arancibia F. et al. *Antimicrobial treatment failures in patients with community-acquired pneumonia: causes and prognostic implications.* Am J Respir Crit Care Med. 2000; 162(1) : 154-60.p Abstract: The aim of the study was to determine the causes and prognostic implications of antimicrobial treatment failures in patients with nonresponding and progressive life-threatening, community-acquired pneumonia. Forty-nine patients hospitalized with a presumptive diagnosis of community-acquired pneumonia during a 16-mo period, failure to respond to antimicrobial treatment, and documented repeated microbial investigation >/= 72 h after initiation of in-hospital antimicrobial treatment were recorded. A definite etiology of treatment failure could be established in 32 of 49 (65%) patients, and nine additional patients (18%) had a probable etiology. Treatment failures were mainly infectious in origin and included primary, persistent, and nosocomial infections ($n = 10$ [19%], 13 [24%], and 11 [20%] of causes, respectively). Definite but not probable persistent infections were mostly due to microbial resistance to the administered initial empiric antimicrobial treatment. Nosocomial infections were particularly frequent in patients with progressive pneumonia. Definite persistent infections and nosocomial infections had the highest associated mortality rates (75 and 88%, respectively). Nosocomial pneumonia was the only cause of treatment failure independently associated with death in multivariate analysis (RR, 16.7; 95% CI, 1.4 to 194.9; $p = 0.03$). We conclude that the detection of microbial resistance and the diagnosis of nosocomial pneumonia are the two major challenges in hospitalized patients with community-acquired pneumonia who do not respond to initial antimicrobial treatment. In order to establish these potentially life-threatening etiologies, a regular microbial reinvestigation seems mandatory for all patients presenting with antimicrobial treatment failures.

Araque M. et al. *[Characterization of plasmids which mediate resistance to multiple antibiotics in gram-negative bacteria of nosocomial origin].* Enferm Infecc Microbiol Clin. 1997; 15(6) : 299-305.p Abstract: BACKGROUND: The genetic and molecular mechanisms involved in antimicrobial resistance of 10 strains of gramnegative bacilli (1 Serratia marcescens; 2 Escherichia coli; 1 Proteus mirabilis; 4 Klebsiella pneumoniae; 1 Enterobacter cloacae y 1 Alcaligenes faecalis), isolated from adult patients with nosocomial pulmonary infection at the in-patient facilities of the University Hospital of Los Andes, Merida, Venezuela, have been studied. METHODS: The antimicrobial susceptibility was determined by minimum inhibitory concentrations using the dilution method in agar. The study of extrachromosomal genes was carried out by conjugation, bacterial infection with the bacteriophage M13 and curing of plasmid by acridine orange. The plasmids were isolated by alkaline lysis and analysis of restriction endonuclease digestion was carried out separately using the enzymes EcoRI and HindIII. A DNA probe, derived

from the region which encodes the TEM-1 beta-lactamase of the plasmid pBR322 was used for dot-blot hybridization tests. RESULTS: All of the gramnegative bacilli showed resistance to ampicillin, carbenicillin and cephalothin (> 128 micrograms/ml) and 3 strains also showed resistance to gentamicin (> 64 micrograms/ml). Genetic and molecular procedures showed the presence of conjugative plasmids of approximately 54 kb in all the 10 strains. The restriction patterns obtained by using EcoRI and HindIII indicated common DNA fragments in most of the plasmids studied. The dot-blot hybridization tests confirmed homology between the plasmids and the DNA probe used (TEM-1 beta-lactamase). CONCLUSIONS: In this study, the gramnegative bacteria of nosocomial origin harbored self-transferable plasmids of approximately 54 kb, which mediate resistance to gentamicin and encode a beta-lactamase of the TEM group.

Araque M. et al. *In vitro activity of fleroxacin against multiresistant gram-negative bacilli isolated from patients with nosocomial infections.* Intensive Care Med. 1998; 24(8) : 839-44.p Abstract: In order to evaluate the in vitro activity of fleroxacin against nosocomial gram-negative organisms, 263 multiresistant gram-negative bacilli (203 Enterobacteriaceae and 60 non-fermenting gram-negative bacilli) were isolated from adult patients with nosocomial infections. The different patterns of resistance to eight different antimicrobial agents (ampicillin, carbenicillin, piperacillin, cephalothin, cefamandole, ceftazidime, gentamicin and amikacin) were determined by minimum inhibitory concentration (MIC), using the agar dilution method. The most prevalent multiresistant species isolated were Klebsiella pneumoniae (28.9%), Escherichia coli (24%) and Pseudomonas aeruginosa (12.2%). All these bacterial strains showed three to five resistance patterns to at least three different antibiotics. Resistance to ceftazidime was observed in at least one of the resistance patterns of isolated bacteria. The activity of fleroxacin against multiresistant enteric bacteria was excellent; these strains showed a susceptibility of 79-100%. The susceptibility of P. aeruginosa to antipseudomonal agents was low; however, the activity of fleroxacin against these strains was higher than 60% (MIC < or = 2 microg/ ml), broadly comparable with ciprofloxacin. The resistance to fluoroquinolones detected in this study was no cause for alarm (3%). Consequently, fleroxacin maintains a remarkable activity against Enterobacteriaceae and remains highly active against other gram-negative bacilli. Nevertheless, actions directed at preventing or limiting resistance will be crucial to maintain the viability of fluoroquinolones as important therapeutic agents.

Arason V.A. et al. *Do antimicrobials increase the carriage rate of penicillin resistant pneumococci in children? Cross sectional prevalence study.* BMJ. 1996; 313(7054) : 387-91.p Abstract: OBJECTIVE: To study the correlation of antimicrobial consumption with the carriage rate of penicillin resistant and multiresistant pneumococci in children. DESIGN: Cross sectional and analytical prevalence study. SETTING: Five different communities in Iceland. MAIN OUTCOME MEASURE: Prevalence of nasopharyngeal carriage of penicillin resistant pneumococci in children aged under 7 years in relation to antibiotic use as determined by information from parents, patient's records, and total sales of antimicrobials from local pharmacies in four study areas. RESULTS: Total antimicrobial sales for children (6223 prescriptions) among the four areas for which data were available ranged from 9.6 to 23.2 defined daily doses per 1000 children daily (1.1 to 2.6 courses yearly per child). Children under 2 consumed twice as much as 2-6 year olds (20.5 v 10.9 defined daily doses per 1000 children daily). Nasopharyngeal specimens were obtained from 919 children, representing 15-38% of the peer population groups in the different areas. Pneumococci were carried by 484 (52.7%) of the children, 47 (9.7%) of the isolates being resistant to penicillin or multiresistant. By multivariate analysis age (< 2 years), area (highest antimicrobial consumption), and individual use of antimicrobials significantly influenced the odds of carrying penicillin resistant pneumococci. By univariate analysis, recent antimicrobial use (two to seven weeks) and use of co-trimoxazole were also significantly associated with carriage of penicillin resistant pneumococci. CONCLUSIONS: Antimicrobial use, with regard to both individual use and total antimicrobial consumption in the community, is strongly associated with nasopharyngeal carriage of penicillin resistant pneumococci in children. Control measures to reduce the prevalence of penicillin resistant pneumococci should include reducing the use of antimicrobials in community health care.

Arasteh K. et al. *Cryptococcosis in HIV infection of man: an epidemiological and immunological indicator?* Zentralbl Bakteriol. 1996; 284(2-3) : 153-63.p Abstract: Cryptococcosis is an epidemiological and immunological indicator due to the absence of Cryptococcus neoformans as a saprophyte in immunocompetent humans and the advantage of specific C. neoformans culture. On this basis, a report is presented on the CD4 lymphocyte count of 36 AIDS patients suffering from cryptococcosis and other concomitant or missing opportunistic AIDS-defining infections. In 26 out of 36 patients, i.e. 72%, a CD4 lymphocyte count of < or = 50/microL (mean value 39.5%) was found. Cryptococcosis as the sole opportunistic infection was diagnosed in 5 cases (13.9%). In 31 cases, various combinations of AIDS-associated diseases were found: Pneumocystis carinii pneumonia (PCP) (n = 19), cytomegalovirus infection (CMV) (n = 10), Kaposi's sarcoma (n = 6), Mycobacterium avium intracellulare infection (MAI) (n = 5), pneumonia (n = 2), toxoplasmosis (n = 2), Candida esophagitis (n = 1), tuberculosis (n = 1), lambliasis (n = 1), salmonellosis (n = 1) and wasting syndrome (n = 5). The conspicuous simultaneous occurrence or succession of pneumocystosis and cryptococcosis and the contrasting absence of aspergillosis and mucormycosis (zygomycosis) are commented. Based on the present observations in HIV-infected persons in Berlin, a CD4 lymphocyte count of < 150/microL may be used as a parameter indicating a predisposition for cryptococcosis as an airborne AIDS-defining infection. Attention is drawn to bird droppings as the sole habitat of C. neoformans and accidental niche of various other microorganisms.

Aratani Y. et al. *Differential host susceptibility to pulmonary infections with bacteria and fungi in mice deficient in myeloperoxidase.* J Infect Dis. 2000; 182(4) : 1276-9.p Abstract: Myeloperoxidase (MPO), which is located within neutrophils capable of producing hypochlorous acid, is active in vitro against bacteria and fungi. However, MPO-deficient persons are usually healthy. To define the in vivo contribution of MPO to early host defense against pulmonary infections, MPO-deficient and control mice were intranasally infected with various fungi and bacteria, and the number of residual microorganisms in lungs was compared 48 h later. MPO-deficient mice showed severely reduced cytotoxicity to Candida albicans, Candida tropicalis, Trichosporon asahii, and Pseudomonas aeruginosa. However, the mutant mice showed a slight but significantly delayed clearance of Aspergillus fumigatus and Klebsiella pneumoniae and had comparable levels of resistance to the wild type against Candida glabrata, Cryptococcus neoformans, Staphylococcus aureus, and Streptococcus pneumoniae. These results suggest that the MPO-dependent oxidative system is important for host defense against fungi and bacteria, although the effect varies by pathogen species.

Archibald L.K. et al. *Hospital-acquired infections in the United States. The importance of interhospital comparisons.* Infect Dis Clin North Am. 1997; 11(2) : 245-55.p Abstract: To use infection rates as a basis for measuring quality of care, the rates must be meaningful for interhospital comparison. A crude, overall nosocomial infection rate of a hospital provides no means of adjustment for patients' intrinsic or extrinsic risks. Before interhospital comparison, rates should be adjusted for nosocomial infection risk factors. Interhospital comparison of rates requires that a hospital participate in a multicenter surveillance system or aggregated national database. This article outlines a series of questions for hospital administrations to pose before entering such an endeavor.

Arditi M. et al. *Three-year multicenter surveillance of pneumococcal meningitis in children: clinical characteristics, and outcome related to penicillin susceptibility and dexamethasone use.* Pediatrics. 1998; 102(5) : 1087-97.p Abstract: OBJECTIVES: To evaluate the antibiotic susceptibility of Streptococcus pneumoniae isolates obtained from the blood and cerebrospinal fluid of children with meningitis. To describe and compare the clinical and microbiological characteristics, treatment, and outcome of children with meningitis caused by S pneumoniae based on antimicrobial susceptibility of isolates and the administration of dexamethasone. DESIGN AND PATIENTS: Children with pneumococcal meningitis were identified from among a group of patients with systemic infections caused by S pneumoniae who were enrolled prospectively in the United States Pediatric Multicenter Pneumococcal Surveillance Study at eight children's hospitals in the United States. From September 1, 1993 to August 31, 1996, 180 children with 181 episodes of pneumococcal meningitis were identified and data were collected by retrospective chart review. OUTCOME: Clinical and laboratory characteristics were assessed. All pneumococcal isolates were serotyped and antibiotic susceptibilities for penicillin and ceftriaxone were determined. Clinical presentation, hospital course, and outcome parameters at discharge were compared between children infected with penicillin-susceptible isolates and those with nonsusceptible isolates and for children who did and did not receive dexamethasone. RESULTS: Fourteen (7.7%) of 180 children died; none of the fatalities were because of a documented failure of treatment caused by a resistant strain. Only 1 child, who had mastoiditis and a lymphangioma, experienced a bacteriologic failure with a penicillin-resistant (minimum inhibitory concentration = 2 microgram/mL) organism. Of the 166 surviving children, 41 (25%) developed neurologic sequelae (motor deficits) and 48 (32%) of 151 children had unilateral (n = 26) or bilateral (n = 22) moderate to severe hearing loss at discharge. Overall, 12.7% and 6.6% of the pneumococcal isolates were intermediate and resistant to penicillin and 4.4% and 2.8% were intermediate and resistant to ceftriaxone, respectively. Clinical presentation, cerebrospinal fluid indices on admission, and hospital course, morbidity, and mortality rates were similar for patients infected with penicillin- or ceftriaxone-susceptible versus nonsusceptible organisms. However, the relatively small numbers of nonsusceptible isolates and the inclusion of vancomycin in the treatment regimen for the majority of the patients limit the power of this study to detect significant differences in outcome between patients infected with susceptible and nonsusceptible isolates. Nonetheless, our results show that the nonsusceptible organisms do not seem to be intrinsically more virulent. Forty children (22%) received dexamethasone (>/=8 doses) initiated before or within 1 hour after the first dose of antibiotics. The incidence of any moderate or severe hearing loss was significantly higher in the dexamethasone group (46%) compared with children not receiving any dexamethasone (23%). The incidence of any neurologic deficits, including hearing loss, also was significantly higher in the dexamethasone group (55% vs 33%). However, children in the dexamethasone group more frequently required intubation and mechanical ventilation and had lower initial concentration of glucose in the cerebrospinal fluid than children who did not receive any dexamethasone. When we controlled for the confounding factor, severity of illness (intubation), the incidence of any deafness and of any neurologic sequelae, including deafness, were no longer significantly different between children who did or did not receive dexamethasone. CONCLUSIONS: Children with pneumococcal meningitis caused by penicillin- or ceftriaxone-nonsusceptible organisms and those infected by susceptible strains had similar clinical presentation and outcome. The use of dexamethasone was not associated with a beneficial effect in this retrospective and nonrandomized study. (ABSTRACT TRUNCATED).

Arduino M.J. et al. *Microbiologic evaluation of needleless and needle-access devices.* Am J Infect Control. 1997; 25(5) : 377-80.p Abstract: OBJECTIVE: This study was carried out to determine whether needleless intravenous access devices are more likely to allow microorganisms to enter the fluid pathway than intravenous needle-access devices. METHODS: A laboratory study was conducted with two needleless and one intravenous needle-access devices and Enterococcus faecium as a bacterial challenge. Inocula of E. faecium were prepared on the basis of the numerical estimates of 1000 to 10,000 colony-forming units (CFU)/cm2 of bacterial flora on dry regions of skin (arms, legs, and hands). The septum of each access device was inoculated with 10 to 20 microliters of a 10(4) to 10(5) CFU/ml challenge suspension, which was allowed to dry on the surface of the septum. In the first part of the experiment, the needleless or needle-access cannula of each device was used to puncture the corresponding septum without previously disinfecting the top of the septum. In the second part, the contaminated septum was punctured after disinfecting the septum with a 70% isopropyl alcohol wipe. After each puncture, trypticase soy broth was flushed through the fluid pathway of the intravenous access device, collected, and cultured by the membrane filtration technique. The septum of each injection-site cap and the needleless or needle-access cannula were sampled with sterile premoistened swabs. Swabs were cultured on blood agar plates. RESULTS: The rate of fluid pathway contamination was 100% (40/40) for one of the needleless intravenous access devices and 80% (20/25) for the other when septa were contaminated with E. faecium and not disinfected before puncture. The rate for the intravenous needle-access device was 72% (18/25). When the septa of the three different devices tested were disinfected with 70% isopropyl alcohol, E. faecium was isolated on only one septum from all devices tested in part two (1/74, 1.3%). CONCLUSIONS: These laboratory studies demonstrate that there is no statistically significant difference in the rate of fluid pathway contamination between needleless and intravenous needle-access devices. However, if the septa of either needleless or needle systems are not disinfected before puncture, a high rate of fluid pathway contamination may occur.

Arguedas A. et al. *Microbiology of acute otitis media in Costa Rican children.* Pediatr Infect Dis J. 1998; 17(8) : 680-9.p Abstract: BACKGROUND: Because of the increasing number of resistant middle ear pathogens reported from different centers worldwide, an active surveillance of the microbiology and susceptibility pattern of middle ear pathogens is required for proper antimicrobial recommendations among different regions of the world. OBJECTIVE: To study the microbiology and susceptibility pattern of middle ear pathogens obtained from Costa Rican children with acute otitis media. METHODS: Between 1992 and 1997 a diagnostic tympanocentesis was performed in 398 Costa Rican patients with acute otitis media. Middle ear fluid was obtained for culture and minimal inhibitory concentrations were determined by the E-test technique in those isolates obtained between October, 1995, and January, 1997. RESULTS: The most common pathogens cultured were Streptococcus pneumoniae (30%), Haemophilus influenzae (14%), Staphylococcus aureus (4%) and Streptococcus pyogenes (4%). Moraxella catarrhalis was uncommon. Beta-lactamase production was low (3.7%) among the H. influenzae isolates but frequent among the Staphylococcus aureus (57.1%) and M. catarrhalis (100%) strains. Overall 9 of 46 S. pneumoniae isolates (19.6%) exhibited decreased susceptibility to penicillin of which 8 isolates (17.4%) showed intermediate and one strain (2.2%) high level resistance. Among the penicillin-susceptible S. pneumoniae isolates, susceptibility to the following antimicrobials was: 81%, azithromycin; 89%, clarithromycin; and 100%, ceftriaxone and trimethoprim-sulfamethoxazole (TMP-SMX). Among the penicillin-resistant S. pneumoniae isolates the percentage of susceptible strains was 89% for azithromycin, clarithromycin and ceftriaxone and 67% for TMP-SMX. CONCLUSIONS: Based on this microbiologic information the agents considered first line drugs in the treatment of acute otitis media in Costa Rica remain amoxicillin or TMP-SMX.

Ariffin H. et al. *Septicaemia in paediatric cancer patients: a 5-year surveillance study in university hospital, Kuala Lumpur, Malaysia.* J Trop Pediatr. 1997; 43(5) : 279-81.p Abstract: Infectious complications are the major cause of morbidity and mortality in children with malignan-

cy. Empirical antimicrobial therapy in the management of fever of unknown origin should be tailored to local bacteriological data and antibiotic sensitivity patterns. Five-hundred-and-fifty-nine cases of culture-proven septicaemia occurring in pediatric cancer patients between 1990 and 1994 were retrospectively analysed and compared with a similar study done in our centre between 1976 and 1979. A wide spectrum of organisms was isolated. Staphylococcus epidermidis, Staphylococcus aureus, and Klebsiella pneumoniae were the most common and consistent bacteria isolated during the 5 year period. More than 70 per cent of the staphylococci were sensitive to methicillin and universally sensitive to vancomycin. However, a worrying trend of ceftazidime-resistance amongst gram-negative organisms was found. In these situations, the use of imipenem is recommended as resistance to this antimicrobial agent was exceedingly rare.

Arikan S. et al. *Isolation, in vitro antimicrobial susceptibility and penicillin tolerance of Arcanobacterium haemolyticum in a Turkish university hospital.* Zentralbl Bakteriol. 1997; 286(4) : 487-93.p Abstract: Arcanobacterium haemolyticum (Ah) was isolated from 5 (0.3%) out of 1531 throat cultures of patients with presumed pharyngotonsillitis. The age of the patients who had a positive culture for Ah varied between 6 and 22. The isolation rate of beta-haemolytic streptococci (BHS) was 7.4%, 72.6% of which belonged to Group A, followed by groups G, C and B. None of the throat samples yielded simultaneous growth of Ah and BHS. Antimicrobial susceptibility of Ah isolates to phenoxymethylpenicillin, cephalexin, cefotaxime, vancomycin, erythromycin, azithromycin, doxycycline, ciprofloxacin, and trimethoprim-sulfamethoxazole was tested by the agar dilution method. The isolates were found to be susceptible to all antimicrobials tested except trimethoprim-sulfamethoxazole. Penicillin tolerance could be detected in none of the Ah strains, including the reference strain Ah ATCC 9345. We conclude that Ah should be kept in mind as a potential pathogen causing pharyngitis in adolescents and young adults.

Ariyasu R.G. et al. *Microorganisms cultured from the anterior chamber of ruptured globes at the time of repair.* Am J Ophthalmol. 1995; 119(2) : 181-8.p Abstract: PURPOSE: We studied events leading to the development of posttraumatic endophthalmitis by examining the significance of 15 factors on microbial contamination of injured eyes. METHODS: A prospective study was done of 30 ruptured globes in patients admitted to an urban medical center. Cultures were taken from the conjunctiva before and after preoperative disinfection and from the anterior chamber at the beginning and end of wound repair. Twenty-five of 30 patients received a three-day regimen of intravenous antibiotics that were begun before surgery. RESULTS: Anterior chamber samples grew microorganisms in ten (33%) of 30 eyes, with positive cultures recovered from specimens taken at the beginning of wound repair in eight eyes and at the end of wound repair in six eyes. Contamination with indigenous flora may have occurred at the time of injury in one eye and during repair in another eye. Microbes recovered included Staphylococcus, Corynebacterium, and Aspergillus species. No patient developed endophthalmitis. Of the 15 factors studied, only intravenous antibiotics significantly decreased the incidence of positive anterior chamber cultures in eyes treated before wound repair compared with eyes not receiving such therapy (P =.002). CONCLUSIONS: Despite the frequency of anterior chamber microbial contamination during injury or repair of the wound, with our treatment protocol and the presence of physiologic mechanisms to reduce intraocular microbes, no eyes developed clinical endophthalmitis. With our limited sample size only intravenous antibiotic therapy was found significantly to reduce anterior chamber microorganisms at the time of surgical repair, supporting their prophylactic use against the development of posttraumatic endophthalmitis.

Arnold K.E. et al. *Risk factors for carriage of drug-resistant Streptococcus pneumoniae among children in Memphis, Tennessee.* J Pediatr. 1996; 128(6) : 757-64.p Abstract: OBJECTIVES: To determine risk factors for carriage of drug-resistant Streptococcus pneumoniae to understand better the factors promoting spread of these isolates. STUDY DESIGN: We obtained medical and demographic information and nasopharyngeal swab specimens from 216 children less than 6 years old with upper respiratory tract infections, seeking medical care at five Memphis, Tenn, study sites. We evaluated risk factors for carriage of penicillin-nonsusceptible S. pneumoniae (NSSP) among 100 children with S. pneumoniae isolates. Patterns of antimicrobial prescription were recorded for enrolled children. RESULTS: Independent risk factors for carriage of NSSP included an increased number of antimicrobial treatment courses during the previous 3 months and white race. Day care attendance approached statistical significance (p = 0.07). Most children with upper respiratory tract infection received a prescription for antimicrobial drugs. These prescriptions were more common for white children than for black children. CONCLUSIONS: Increased use of antimicrobial drugs enhances the risk of carriage of NSSP. This may contribute to the higher risk among white children of NSSP infection; however, after control for antimicrobial use, white children were still at an increased risk of infection with NSSP, possibly through greater exposure to resistant strains.

Arns da Cunha C. et al. *Early gram-positive bacteremia in BMT recipients: impact of three different approaches to antimicrobial prophylaxis.* Bone Marrow Transplant. 1998; 21(2) : 173-80.p Abstract: Antimicrobial prophylaxis against gram-positive bacteremia (GPB) following BMT may prevent infections but promote antimicrobial resistance. In a sequential cohort study involving 289 consecutive BMT recipients we compared three protocols for prevention of GPB (vancomycin prophylaxis, penicillin/cefazolin prophylaxis, and no specific GPB prophylaxis) with respect to incidence of GPB, mortality, and vancomycin use. GPB was associated with increased mortality (27% vs 15%; P = 0.02), but contributed to only five of 52 deaths in the study population, and only one of 15 subjects with viridans streptococcal bacteremia developed fatal septic shock. Vancomycin prophylaxis reduced the incidence of GPB (11%) compared to penicillin/cefazolin (27%) or no prophylaxis (40%) (all P < 0.03), but did not significantly reduce mortality. The incidence of fungemia, gram-negative bacteremia, and infection-associated mortality was unaffected by GPB prophylaxis. Vancomycin use was substantially greater in the vancomycin prophylaxis group. We conclude that in comparison with vancomycin prophylaxis, BMT support regimens that do not include vancomycin prophylaxis allow reduced overall vancomycin use without an apparent increase in early post-BMT mortality, despite the greater associated frequency of GPB.

Arreaza L. et al. *[Susceptibility to antimicrobial drugs used in the prophylaxis of meningococcal disease: situation after an epidemic wave].* Rev Esp Quimioter. 2000; 13(2) : 182-6.p Abstract: In the early 1990s a rise in the incidence of meningococcal disease was observed in Galicia, Spain, most cases of which were caused by serogroup C meningococcal strains. As part of the epidemiological analysis of this epidemic wave, two studies of asymptomatic carriers of neisseria meningitidis were carried out: the first took place during the period of maximum incidence and coincided with a massive immunization campaign (December 1996 to January 1997); and the second was conducted one year later (January 1998). A total of 1234 meningococcal strains were isolated in both studies (789 in the first and 445 in the second study) and the susceptibility to rifampin, ciprofloxacin, ceftriaxone and sulfadiazine was determined. The susceptibility to rifampin, ciprofloxacin and cetriaxone was high among the strains isolated in both studies. For sulfadiazine, the percentage of resistant strains was 92.6% for the first and 86.3% for the second study.

Arreaza L. et al. *Antibiotic susceptibility patterns of Neisseria meningitidis isolates from patients and asymptomatic carriers.* Antimicrob Agents Chemother. 2000; 44(6) : 1705-7.p Abstract: The activities of

seven antimicrobial agents used for treatment and prophylaxis of meningococcal disease was investigated against 901 Neisseria meningitidis isolates, 112 of which were recovered from patients and 789 of which were recovered from asymptomatic carriers. The proportions of isolates with decreased susceptibility to penicillin were 55.3 and 39.0%, respectively. Penicillin- and ampicillin-intermediate strains were more common among serogroup C meningococci than among non-serogroup C meningococci from both patients and carriers.

Arrese J.E. et al. *A pilot study on bacterial viability in acne. Assessment using dual flow cytometry on microbials present in follicular casts and comedones.* Int J Dermatol. 1998; 37(6) : 461-4.p Abstract: BACKGROUND: Antibiotic therapy is one of the main methods of acne treatment, however, bacterial resistance is on the rise and can affect the treatment outcome. Quantitative bacteriologic cultures are the gold standard methodology for the assessment of such a problem; however, certain important biological aspects remain uncovered. OBJECTIVE: The purpose of this study was to compare the antibacterial activity of minocycline and lymecycline in sebaceous follicle infundibula and comedones of acne patients. METHOD: We used a recently introduced flow cytometric method, allowing a distinction to be made between viable, injured (presumably resistant), and dead microorganisms. RESULTS: Minocycline (100 mg) proved to be superior to lymecycline (600 mg) in abating the microflora harboring in the sebaceous follicles of acne patients. CONCLUSIONS: The dissimilar bioavailability and antimicrobial efficacy between the two bacteriostatic agents may impart different clinical efficacy.

Arruabarrena I. et al. *[Incidence and clinical features of splenic abscesses, with special reference to tuberculous etiology in a general hospital].* Gastroenterol Hepatol. 1998; 21(10) : 479-82.p Abstract: BACKGROUND: The aim of this revision is to know the incidence of splenic abscess (SA) in our hospital, its etiology, with special reference to tuberculosis, and clinical characteristics. PATIENTS AND METHODS: Abdominal CT-scan performed during the period 1987-1997, with the diagnosis of splenic abscess were reviewed. Etiologic diagnosis standed on blood or sputum cultures, PAAF and/or histologic study of lymph nodes. RESULTS: Seventeen cases of SA were obtained, 12 males and 5 females. Limits of age: 13 and 77 years. The causal microorganisms were: M. tuberculosis (7), Mycobacterium aviumintracellulare (1), S. aureus (2), S. anginosus (1), S. milleri (1), E. coli (1), C. albicans (1), T. biguelle (1) and polymicrobian flora (1). One case was of unknown etiology. Underlying illnesses were: AIDS (7), malignant neoplasms (3), diabetes (2), endocarditis (2), Sjogren syndrome (1) and complications of abdominal surgery (2). Clinical presentation in nontuberculous splenic abscess was fever and upper-left abdominal pain. Predominant symptoms in tuberculous splenic abscess were fever and weight loss. Blood cultures were positive in 80% of non tuberculous splenic abscess. Specific treatment for tuberculosis improved all patients with tuberculous splenic abscess, without needing surgery or corticosteroids. CONCLUSIONS: From the total of splenic abscess, 41.1% were tuberculous, six with AIDS and one with Sjogren syndrome. Diabetes and malignant neoplasms were the commonest underlying illnesses in the non-tuberculous. In these, clinical presentation consisted in fever and upper-left abdominal pain. In patients with tuberculous splenic abscess, the main complaint was weight loss. A prompt treatment is generally succesful.

Arvola T. et al. *Prophylactic Lactobacillus GG reduces antibiotic-associated diarrhea in children with respiratory infections: a randomized study.* Pediatrics. 1999; 104(5) : e64.p Abstract: OBJECTIVES: Antimicrobial treatment may disturb the colonization resistance of gastrointestinal microflora, which may induce clinical symptoms, most commonly diarrhea. The severity of antibiotic-associated diarrhea may range from a brief, self-limiting disease to devastating diarrhea with electrolyte disturbances, dehydration, crampy abdominal pain, pseudomembranous colitis, toxic megacolon, or even death. The incidence of diarrhea in children receiving a single antimicrobial treatment is unclear. In addition to more critical use of antimicrobials, adjunctive preventive measures to antibiotic-associated diarrhea are needed. The objective of this study was to evaluate the incidence of diarrhea after antimicrobial treatment in children with no history of antimicrobial use during the previous 3 months. Another aim of this study was to assess the preventive potential of Lactobacillus rhamnosus GG (Lactobacillus GG; American Type Culture Collection 53103), a probiotic strain with a documented safety record and a therapeutic effect in viral gastroenteritis on antibiotic-associated diarrhea. METHODS: Oral antimicrobial agents were prescribed for the treatment of acute respiratory infections at the clinics of the Health Care Center of the City of Tampere or Tampere University Hospital, Finland, to 167 patients who were invited to participate in the study. Of the patients, 48 were lost to follow-up; therefore, the final study population consisted of 119 children from 2 weeks to 12. 8 years of age (mean: 4.5 years). All study subjects met the inclusion criteria: they had not received any antimicrobial medication during the previous 3 months, they did not suffer from gastrointestinal disorders, and they did not need intravenous antimicrobial treatment. The patients were randomized to receive placebo or 2 x 10(10) colony-forming units of Lactobacillus GG in capsules given twice daily during the antimicrobial treatment. Lactobacillus GG and placebo capsules were indistinguishable in appearance and taste. The parents kept a daily symptom diary and recorded stool frequency and consistency at home for 3 months. Diarrhea was defined as at least three watery or loose stools per day for a minimum of 2 consecutive days. In the case of diarrhea, viral (adenovirus, rotavirus, calicivirus and astrovirus) and bacterial (Salmonella, Shigella, Yersinia, Campylobacter, Clostridium difficile, Staphylococcus aureus, and yeasts) analyses were studied in fecal samples. The metabolic activity of the gut microflora was assessed by analysis of fecal urease, beta-glucosidase, and beta-glucuronidase activities. The primary outcome measure was diarrhea during the first 2 weeks after the beginning of the antimicrobial treatment, because this period most likely reflects the effects of antimicrobial use. Secondary outcome measures were the activities of fecal urease, beta-glucuronidase, and beta-glucosidase. RESULTS: On the entire follow-up, 80% of any gastrointestinal symptoms were reported during the first 2 weeks after the beginning of the antimicrobial treatment. The incidence of diarrhea was 5% in the Lactobacillus GG group and 16% in the placebo group within 2 weeks of antimicrobial therapy (chi(2) = 3.82). The treatment effect (95% confidence interval) of Lactobacillus GG was -11% (-21%-0%). In diarrheal episodes, the viral and bacterial analyses were positive for Clostridium difficile in 2 cases and for Norwalk-like calicivirus in 3 cases. The age of the patients with diarrhea was between 3 months and 5 years in 75% of cases in both groups. The severity of diarrhea was comparable in the study groups, as evidenced by similar stool frequency (mean: 5 per day; range: 3-6) and the duration of diarrhea (mean: 4 days; range: 2-8). The activities of fecal urease and beta-glucuronidase, but not beta-glucosidase, changed significantly after the beginning of the antimicrobial treatment in the Lactobacillus GG group and in the placebo group alike. (ABSTRACT TRUNCATED).

Asai T. et al. *An Escherichia coli strain with all chromosomal rRNA operons inactivated: complete exchange of rRNA genes between bacteria.* Proc Natl Acad Sci U S A. 1999; 96(5) : 1971-6.p Abstract: Current global phylogenies are built predominantly on rRNA sequences. However, an experimental system for studying the evolution of rRNA is not readily available, mainly because the rRNA genes are highly repeated in most experimental organisms. We have constructed an Escherichia coli strain in which all seven chromosomal rRNA operons are inactivated by deletions spanning the 16S and 23S coding regions. A single E. coli rRNA operon carried by a multicopy plasmid supplies 16S and 23S rRNA to the cell. By using this strain we have succeeded in creating microorganisms that contain only a foreign rRNA operon derived from either Salmonella typhimurium or Proteus vulgaris, microorganisms that have diverged from E. coli

about 120-350 million years ago. We also were able to replace the E. coli rRNA operon with an E. coli/yeast hybrid one in which the GTPase center of E. coli 23S rRNA had been substituted by the corresponding domain from Saccharomyces cerevisiae. These results suggest that, contrary to common belief, coevolution of rRNA with many other components in the translational machinery may not completely preclude the horizontal transfer of rRNA genes.

Asaka T. et al. *Tuberculous tenosynovitis in the elbow joint.* Intern Med. 1996; 35(2) : 162-5.p Abstract: A 74-year-old woman was noted to have a mass lesion near the right elbow joint during medication for pulmonary tuberculosis. After discontinuation of medication, the mass gradually became enlarged with swelling and tenderness of the joint. Radiological evaluation disclosed tenosynovitis with an encapsulated abscess. Microscopic examination and culture of an aspiration biopsy specimen from the abscess showed no microorganisms. However, DNA extracted from the specimen contained mycobacterium tuberculosis DNA, permitting a diagnosis of tuberculous tenosynovitis. Mycobacterium is not always detected in biopsy specimens of tuberculous arthritis and tenosynovitis. In such cases, genetic diagnosis may be of great use.

Asaria R.H. et al. *Biofilm on scleral explants with and without clinical infection.* Retina. 1999; 19(5) : 447-50.p Abstract: PURPOSE: Biofilm is a glycocalyx matrix secreted by microorganisms that confers protection against host defenses and antimicrobial treatment. Biofilms have been implicated in the persistence of scleral buckle infections. This study aimed to evaluate the incidence of biofilm growth on scleral explants and the relationship to explant infection. METHODS: Scleral explants were obtained following removal for infection or extrusion or during repeat surgery. Explants were fixed with rhuthenium red and examined by scanning electron microscopy to visualize the glycocalyx. RESULTS: A total of 28 explants were analyzed. Ten were removed because of either infection or extrusion and 18 were removed during repeat surgery. The mean time to removal of explants was 36 months in the infection/extrusion group and 12 months in the others. Biofilm was identified on five explants-two removed because of infection/extrusion and three for surgical indications. Bacterial elements were identified in all biofilms. CONCLUSIONS: Biofilm was identified on explants removed because of infection or exposure and on explants removed for technical reasons at repeat surgery. This implies that bacterial contamination and biofilm formation occur without exposure of the explant, probably due to inoculation at the time of initial surgery. Biofilms may contribute to the persistence of scleral explant infections but a causative role in buckle extrusion is unproved.

Asbel L.E. et al. *Cephalosporins, carbapenems, and monobactams.* Infect Dis Clin North Am. 2000; 14(2) : 435-47, ix.p Abstract: Nonpenicillin beta-lactams exhibit a variable spectrum of antimicrobial activity, have a wide range of clinical uses and a favorable safety profile. Cefepime's twice-daily dosage and increased activity against Enterobacteriaceae may offer some advantages over older cephalosporins. The carbapenems offer a broad antimicrobial spectrum, and meropenem has an improved safety profile compared with imipenem. Aztreonam is a useful alternative for patients with aerobic gram-negative infections who are allergic to penicillin. The emergence of resistant organisms, however, is an increasing problem with the frequent use of these antibiotics.

Asensi V. et al. *[Severe orbital cellulitis: therapeutic results in 9 patients and review of the literature].* Enferm Infecc Microbiol Clin. 1996; 14(4) : 250-4.p Abstract: BACKGROUND. Orbital cellulitis can produce severe neuromeningeal infections. Modern antimicrobial agents such as imipenem can be a valid therapeutical choice. METHODS. Patients with severe or complicated orbital cellulitis admitted to our hospital from 1986 through 1994 were retrospectively studied. RESULTS. Nine patients with severe orbital cellulitis, seven of them older than 14 years, are reported. Cellulitis was secondary to different forms of sinusitis in five of them. The incriminated microorganisms were: Streptococcus viridans alone or combined to gram negative bacilli (3 cases), Prevotella melaninogenica and other anaerobes (2 cases), Enterococcus faecalis and Staphylococcus aureus (one case each). Three patients developed brain abscesses, one an acute bacterial meningitis and another a subdural empyema. Eight patients underwent a surgical drainage. Seven patients were treated with IV imipenem at doses of 2-3 g/day with complete cure of the orbital cellulitis and of the associated infectious complications and no secondary effects. Two patients died. CONCLUSIONS. Imipenem is an effective antibiotic in the combined medical-surgical treatment of the severe or complicated orbital cellulitis.

Asero R. *Detection of patients with multiple drug allergy syndrome by elective tolerance tests.* Ann Allergy Asthma Immunol. 1998; 80(2) : 185-8.p Abstract: BACKGROUND: Multiple drug allergy syndrome (MDAS) caused by antibiotics is frequently observed in allergy departments; however, risk factors for such a condition as well as the means to detect patients prone to MDAS are poorly defined. OBJECTIVE: The identification of patients prone to MDAS and the detection of risk factors for multiple antibiotic sensitivity. METHODS: Two hundred fifty-three elective oral challenges with alternative antimicrobial drugs were performed in 120 patients with histories of recent allergic reactions to antibiotics. RESULTS: Twenty-three (19%) subjects reacted to at least one antibiotic class. All reactions were mild and easily controlled by conventional therapy. Female sex, history of multiple antibiotic reactions, and reactions to nonsteroidal antinflammatory drugs were the main risk factors for reactions to alternative antibiotics. To date, no patient has reported immediate adverse reactions to drugs negative on oral challenge tests but one had urticaria/angioedema on the fifth day of full dose treatment with ofloxacin. CONCLUSIONS: Elective oral challenges with alternative antibiotics are a sensitive, specific, and safe means to detect patients with MDAS, thus sparing them more severe adverse reactions caused by full dose therapies. The recommendation to perform oral challenge tests with antibiotics just before their therapeutic use seems unnecessary and should be reconsidered.

Ashkenazi S. et al. *Increasing antimicrobial resistance of Shigella isolates in Israel during the period 1984 to 1992.* Antimicrob Agents Chemother. 1995; 39(4) : 819-23.p Abstract: Recent (1984 to 1992) trends in the antimicrobial resistance of Shigella isolates in Israel were studied by analyzing the results of 106,000 stool cultures, 3,511 of which yielded Shigella spp. Over the study period, resistance to trimethoprim-sulfamethoxazole (TMP-SMX) increased from 59 to 92% ($P = 0.0038$) and that to ampicillin increased from 13 to 86% ($P < 0.0001$). Resistances to nalidixic acid, chloramphenicol, and broad-spectrum cephalosporins remained low. Shigella sonnei, which currently accounts for 90% of Shigella infections, was more resistant than S. flexneri to TMP-SMX (81 versus 57%, $P < 10(-6)$), ampicillin (42 versus 32%, $P < 10(-5)$), and tetracycline (38 versus 28%, $P < 10(-5)$). S. boydii and S. dysenteriae were relatively rare. Seasonality in antimicrobial resistance was found, with summer isolates being less resistant to TMP-SMX, ampicillin, or both than isolates obtained over the rest of the year ($P < 10(-5)$). We conclude that the resistance of shigellae, especially S. sonnei, to TMP-SMX and ampicillin is increasing to approximately 90%. Resistance should be recorded locally, and empiric therapy for suspected shigellosis should be changed accordingly.

Astagneau P. *[Epidemiology of nosocomial infections].* Rev Prat. 1998; 48(14) : 1525-9.p Abstract: The frequency of nosocomial infections lies between 5 and 10%, and varies according to the type of hospital and service. Age, underlying disease invasive devices (such as catheters) or procedures are the main risk factors. Common nosocomial infections are urinary tract infections, pneumonia, surgical site infections, bacteremia/septicemia and intravascular catheter-related infections. Gram positive cocci and gram negative bacilli account for one third and two thirds of microorganisms respective-

ly, Staphylococcus aureus being frequently resistant to antibiotics. Prevention is based on a better control of infection risk related to the use of invasive devices.

Ates O. et al. *Synthesis and antimicrobial activity of 4-carbethoxymethyl-2-[(alpha-haloacyl)amino] thiazoles and 5-nonsubstituted/substituted 2-[(4-carbethoxymethylthiazol-2-yl)imino]-4-thiazolidinones.* Arzneimittelforschung. 2000; 50(6) : 569-75.p Abstract: 4-Carbethoxymethyl-2-[(chloroacetyl/alpha-chloropropionyl/al pha-bromobutyryl/alpha-chloro-(alpha-phenylacetyl)amino]thiazoles (I-IV) were synthesized by reacting 4-carbethoxymethyl-2-aminothiazole with chloroacetyl chloride, alpha-chloropropionyl chloride, alpha-bromobutyryl bromide and alpha-chloro-alpha-phenylacetyl chloride, respectively. Furthermore, I-IV were refluxed with ammonium thiocyanate to give 2-[(4-carbethoxymethylthiazol-2-yl)imino]-4-thiazolidinones (V-VIII). V was refluxed with various aromatic aldehydes to give 5-arylidene-2-[(4-carbethoxymethylthiazol-2-yl)imino]-4-t hiazolidinones (IX-XIV). The structures of synthesized compounds were confirmed by elemental analyses, hydrolysis, UV, IR, 1H-NMR and EI mass spectral data. The antimicrobial activities of the compounds were assessed by microbroth dilution technique using Mueller-Hinton broth and Mueller-Hinton Agar. In this study, Staphylococcus aureus ATCC 6538, Staphylococcus epidermidis ATCC 12228, Escherichia coli ATCC 8739, Klebsiella pneumoniae ATCC 4352, Pseudomonas aeruginosa ATCC 1539, Salmonella typhi, Shigella flexneri, Proteus mirabilis and Candida albicans ATCC 10231 were used as test microorganisms. Among the tested compounds, XI and XIV showed activity against S. aureus (MIC: 78 micrograms/ml, 1.6 micrograms/ml), whereas compound V had an activity against S. flexneri (MIC: 39 micrograms/ml) and compound I against C. albicans (MIC: 125 (micrograms/ml). Compounds I, IV-XIV were also evaluated for antituberculosis activity against Mycobacterium tuberculosis H37Rv using the BACTEC 460 radiometric system and BACTEC 12B medium. Only compounds I and XIV showed 86% and 67% inhibition in the primary screen.

Atkins P.M. et al. *Characteristics and outcomes of patients who self-extubate from ventilatory support: a case-control study.* Chest. 1997; 112(5) : 1317-23.p Abstract: OBJECTIVE: To identify factors associated with the occurrence of deliberate self-extubation and to describe associated patient outcomes. DESIGN: Case-control study. SETTING: ICUs of a national referral, tertiary medical center. PARTICIPANTS: Fifty adult, intubated patients who had self-extubated from mechanical ventilatory support. Two control subjects who had not self-extubated were matched to each case based on age, gender, primary discharge diagnosis, and time hospitalized (within same quarter). MEASUREMENTS: Standardized coding of medical record information, including demographic characteristics, clinical information, intubation and mechanical ventilation characteristics, medications, and selected laboratory indexes. RESULTS: As compared to the control subjects, patients who self-extubated were more likely to be medical than surgical patients ($p<0.001$) and have a current history of smoking ($p<0.05$). Prior to the self-extubation, patients had a greater likelihood of hospital-acquired infections ($p<0.001$) or other hospital-acquired adverse events ($p<0.001$), abnormal (<10, >50 mg/dL) BUN ($p<0.05$), and abnormal (<20, >50 mm Hg) PaCO2 ($p<0.05$); they also were more likely to be restless or agitated ($p<0.001$), and more likely to be physically restrained ($p<0.001$). A logistic regression model demonstrated that presence of restlessness or agitation and presence of a hospital-acquired adverse event were independently associated with self-extubation from mechanical ventilatory support. In examining outcomes, as compared to the control subjects, those who self-extubated had longer lengths of stay in ICU and hospital, were more likely to need reintubation, and were more likely to suffer complications from intubation. However, none of the cases died within 48 h of self-extubation. CONCLUSION: The results underscore the need for clinical guidelines for weaning and for monitoring patients at risk of self-extubation.

Atmaca S. et al. *Effect of microwaves on survival of some bacterial strains.* Acta Microbiol Immunol Hung. 1996; 43(4) : 371-8.p Abstract: While the inhibitory effect of microwave radiation on microorganisms is being researched intensively, how microwave radiation brings about this effect has been a matter of discussion. Some researchers support that this effect is of a thermal character, whereas some others maintain a non-thermal effect. In this work, 1 ml suspensions of Pseudomonas aeruginosa, Pseudomonas acidovorans staphylococcus aureus and Staphylococcus epidermidis bacteria were subjected to microwave radiation at 2450 MHz and 550 Watts for periods of 5, 6, 7, 8, 10, 12, 14, 16, 18, 20, 25 and 30 seconds. When each result was compared with the CFU/ml results obtained from unradiated control group bacterial suspensions derived from stock cultures, significant conclusions were attained ($P < 0.001$). The same experiments were repeated with the application of conventional heating. The difference between the CFU/ml values of similar bacterial suspensions subjected to microwave radiation and conventional heating was significant ($P < 0.001$). Concurrently, the fact that the effect was exacerbated upon increasing of liquid volume during the application of microwave radiation was established via the results obtained through the application of microwave radiation to 1 ml and 5 ml bacterial suspensions ($P < 0.001$).

Atroshi F. et al. *Evaluation of the antibacterial and hemolytic activities of Latvian herbal preparation.* Vet Hum Toxicol. 2000; 42(6) : 341-4.p Abstract: Three extracts originating from a combination of various Latvian plant species were tested for their antibacterial activities by evaluating growth delays using a fully automated microturbidimetric method. Ten different human and bovine strains of the genera Staphylococcus and Micrococcus were used as test microorganisms. The inhibitory effect in vitro was defined as the difference between the growth rate without herbs and the growth rate in the presence of an extract. Among the tested strains, Staphylococcus aureus was found sensitive to all 3 extracts. However, extract I was the most effective in slowing the growth of all strains tested. Using appropriate tester strains it should be possible to set up a broad-range microtubidimetry assay for individual herb screening in vitro. The hemolytic effects of the individual extracts on human erythrocytes were also studied at different concentrations. Two of the herbal extracts had minimal lytic effects on eurocaryotic cells. An additional hemolysis test was conducted in the presence of coenzyme Q10 (CoQ10) as a free radical scavenger: CoQ10 had no effect on the hemolytic reaction.

Atukorala S.D. *Monitoring effectiveness of controlling hospital acquired infections by prevalence surveys.* Ceylon Med J. 1998; 43(3) : 134-7.p Abstract: OBJECTIVE: To determine the effectiveness of control measures for hospital acquired infection (HAI) by prevalence studies. SETTING: National Hospital of Sri Lanka in Colombo (NHSL). STUDY DESIGN AND METHOD: Two prevalence surveys were undertaken, in October 1994 and in July 1997, after implementing infection control measures. The numbers of patients in the two studies were 2563 and 2865. The subjects were assessed for hospital acquired infection through information obtained from case notes and by discussion with ward nursing and medical staff. The changes in infection control activities during this 3-year period included increasing the number of infection control nurses, educational programs to health care workers at all levels, improvements in disposal of clinical waste, implementing published guidelines for use of antibiotics, cannula-site management and urinary catheter care. RESULTS: The prevalence of HAI in the hospital decreased significantly ($p < 0.0001$) from 13.5% in 1994 to 8.7% in 1997. A significant decrease ($p < 0.0001$) in infection rates was observed in medical wards, but the decrease in surgical wards and the burns unit did not reach statistical significance. The intensive care units showed a weakly significant increase ($p < 0.05$) of infection rate attributable to the large number of war injured who needed intensive care. The most significant reduction in rates of infection was seen in wound infection ($p < 0.001$), respiratory infections ($p < 0.01$) and in cannula site infec-

tions (p < 0.001). CONCLUSION: Implementation of infection control policies can have a significant impact on the prevalence of HAI, and their effectiveness could be measured by repeated prevalence surveys.

Austrian R. *The pneumococcus at the millennium: not down, not out.* J Infect Dis. 1999; 179 Suppl 2 : S338-41.p Abstract: In the 12 decades that will have elapsed between the first isolation of the pneumococcus and the coming millennium, much of fundamental biologic importance has been learned from the study of this bacterium and the diseases it causes. Streptococcus pneumoniae is associated with the development of Gram's stain, the Quellung reaction, and many of the fundamentals of immunology. It has also played a significant role in the history of antimicrobial therapy. After a transitory period of euphoria engendered by the improved prognosis of pneumococcal pneumonia resulting from therapeutic advances, recognition that the newer treatments could not bring about the recovery of those sustaining early irreversible physiologic injury led to renewed interest in immunoprophylaxis. Added impetus to this approach has been fostered by the recent rapid increase in the number of pneumococcal isolates resistant to antimicrobial agents and in the magnitude of their resistance. Pneumococcal vaccines are increasingly relevant.

Avila-Campos M.J. et al. *Distribution of biotypes and antimicrobial susceptibility of Actinobacillus actinomycetemcomitans.* Oral Microbiol Immunol. 1995; 10(6) : 382-4.p Abstract: Eighty isolates of Actinobacillus actinomycetemcomitans from 30 Brazilian periodontitis patients were examined to determine the distribution of biotypes and in vitro antimicrobial susceptibility. Seventy-seven percent of the isolates belonged to biotype X. All A. actinomycetemcomitans isolates were susceptible to cefoxitin, imipenem and tetracycline.

Avilés L. C.L. et al. *Carta al editor.* Rev. chil. infectología. 1997; 14(1) : 62-3.p Abstract: Se presenta el caso de un paciente que presentó una meningitis bacteriana aguda cuyo agente causal fue S. pneumoniae resistente a penicilina y a cefalosporinas de 31' generación, cursando una evolución difícil y quedando con múltiples secuelas neurológicas. La gravedad y evolución clínica de este paciente es susceptible de verse en meningitis producidas por S. pneumoniae sensible. Sin embargo, la respuesta más lenta de la infección al tratamiento antibiótico sugiere que la resistencia del S. pneumoníae a la penicilina determinó en este paciente un importante grado de secuelas. El uso de vancomicina asociada a ceftriaxona, en forma empírica mientras se conoce el resultado de la sensibilidad del germen, en cualquier paciente con meningitis por S. pneumoníae, podría contribuir a disminuir las complicaciones en aquellos pacientes en que las pruebas de sensibilidad in vitro demostraran la presencia de un S. pneumoníae resistente (AU).

Axelrood P.E. et al. *Douglas-fir root-associated microorganisms with inhibitory activity towards fungal plant pathogens and human bacterial pathogens.* Can J Microbiol. 1996; 42(7) : 690-700.p Abstract: A microbial culture collection composed of 1820 bacterial strains, including 298 actinomycete strains, was established from the roots of Douglas-fir (Pseudotsuga menziesii (Mirb.) Franco) seedlings harvested from conifer nurseries and forest sites. Two hundred and thirty-four strains inhibited the growth of Fusarium, Cylindrocarpon, and (or) Pythium spp. in in vitro assays. A significantly greater proportion of bacterial strains from actinomycete genera exhibited antifungal properties compared with bacterial strains from nonactinomycete genera. Eighty-nine percent of identified inhibitory strains were Streptomyces, Streptoverticillium, Bacillus, Pseudomonas, or Burkholderia species. The actinomycete species were isolated almost exclusively from forest seedlings. Recovery of inhibitory strains representing 29 microbial species was enhanced using a variety of methods to isolate microorganisms from the roots of seedlings from nursery and forest sites. Bacterial strains (including actinomycete strains) with antifungal activity were tested for in vitro growth inhibition of six clinical human bacterial pathogens (Enterococcus faecalis, Staphylococcus aureus, Klebsiella pneumoniae, Escherichia coli, Proteus mirabilis, and Pseudomonas aeruginosa). Forty-eight percent of the tested strains inhibited one or more human pathogens, Inhibitory activity towards fungal and bacterial pathogens was strain specific, not species specific, and many inhibitory strains exhibited broad-spectrum activity. Strains with antifungal activity against several conifer root pathogens were also more likely to inhibit multiple species of clinical bacterial pathogens.

Aygen B. et al. *Adrenal functions in patients with sepsis.* Exp Clin Endocrinol Diabetes. 1997; 105(3) : 182-6.p Abstract: The basal cortisol level and cortisol response to ACTH stimulation test were assessed in patients with sepsis, the results being compared to a control group of 30 healthy persons. The study group included 49 patients with sepsis and 30 healthy subjects as a control group. The mean age in the study group was 42.6 +/- 18.7 years and 41.4 +/- 12.1 years in the control group. Fifteen of the 49 (30.6%) patients had hospital-acquired and 34 (69.4%) patients community-acquired sepsis. Etiological agent was isolated in 35 (71.4%) patients (57.1% gram negative bacteria and 34.3% gram positive bacteria, plus 8.6% polymicrobial). Fourteen of 49 (28.6%) patients died. Mean basal cortisol level was 597.1 +/- 304.6 nmol/l (range 217.8-1667.9) in the study group and 460.2 +/- 180.8 nmol/l (range 253.6-988.9) in the control group. Mean basal cortisol level in the study group was significantly higher than that of the control group (p < 0.05). Mean basal cortisol level was found to be 725.5 +/- 448.9 nmol/l in the patients who died and 545.8 +/- 210.9 nmol/l in the patients who recovered. The difference between the two groups was found to be significant (p < 0.05). ACTH stimulation test was performed in 43 of the patients and 30 healthy subjects. Cortisol response was significantly lower (mean 277.7 +/- 216.9 nmol/l) in the patients than that detected in the control group (mean 519.6 +/- 279.2) (p < 0.001). Mean cortisol response in the patients who died was 227.2 +/- 224.5 nmol/l and 302.1 +/- 212.7 nmol/l in the patients who recovered (p > 0.05). Adrenocortical insufficiency was detected in 16.3% of the patients and 42.9% of these patients died. In conclusion, sepsis is characterized by high basal cortisol level which may show a poor prognosis and a blunted cortisol response to ACTH stimulation. A small percentage of patients with sepsis may develop adrenocortical insufficiency.

Ayhan H. et al. *Antimicrobial effects of various endodontic irrigants on selected microorganisms.* Int Endod J. 1999; 32(2) : 99-102.p Abstract: AIM: This study was undertaken to determine the antimicrobial effect of various endodontic irrigants against six selected microorganisms. METHODOLOGY: Staphylococcus aureus, Enterococcus faecalis, Streptococcus salivarius, Str. pyogenes, Escherichia coli and Candida albicans were included in the study. Pre-sterilized Whatman paper discs, 6 mm in diameter and soaked with the test solution, were prepared and placed onto the previously seeded agar Petri plates. Each plate was incubated aerobically. A zone of inhibition was recorded for each plate and the results were analysed statistically. RESULTS: 5.25% NaOCl was effective against all test microorganisms with a substantial zone of inhibition. Saline was always ineffective. Decreased concentration of NaOCl significantly reduced its antimicrobial effect. Cresophene showed a significantly larger (P < 0.05) average zone of inhibition compared to the other experimental irrigants. Alcohol had smaller but not significantly different zones of inhibition than chlorhexidine. CONCLUSIONS: 5.25% NaOCl was superior in its antimicrobial abilities compared with other irrigants used. A reduced concentration of NaOCl (0.5%) resulted in significantly decreased antimicrobial effects. When compared with 21% alcohol, 0.5% NaOCl and 2% chlorhexidine, paramonochlorophenol (cresophene) showed a greater antimicrobial effect.

Aysev A.D. et al. *Drug resistance of Shigella strains isolated in Ankara, Turkey, 1993-1996.* Scand J Infect Dis. 1998; 30(4) : 351-3.p Abstract: 289 Shigella strains were isolated from children at the paediatrics department of Ankara University. 75% of the isolates were S. sonnei

and 24.8% were S. flexneri. Each strain was tested for resistance to 9 antimicrobial agents. 79% of the isolates were resistant to streptomycin (S), 56% to tetracycline (T), 55.7% to trimethoprim-sulfamethoxazole (SXT), 27.7% to ampicillin (Am) and 19.7% to chloramphenicol (C). None of the isolates was resistant to ciprofloxacin, nalidixic acid, cephalothin, ampicillin-sulbactam and ceftriaxone. 56% of the isolates were resistant to 3 or more antimicrobial agents. The most frequent pattern of resistance of S. sonnei and S. flexneri strains was SXT, T, S (39.6%) and Am, SXT, T, S, C (48.6%), respectively ($p < 0.0001$). These results demonstrate that trimethoprim-sulfamethoxazole should not be used in the treatment of shigellosis.

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Babic I. et al. *Changes in microbial populations on fresh cut spinach*. Int J Food Microbiol. 1996; 31(1-3) : 107-19.p Abstract: The microbial populations found on fresh-cut spinach leaves that were stored in gas permeable bags at 10 degrees C for 12 days were examined and identified. The microorganisms consisted of mesophilic aerobic bacteria, psychrotrophic bacteria, Pseudomonadaceae, Enterobacteriaceae, Micrococcaceae, lactic acid bacteria and yeasts. Populations of mesophiles, psychrotrophs, Pseudomonadaceae and Enterobacteriaceae increased sharply during the storage period. The initial populations were 10(7), 10(6), 10(6) and 10(4) CFU.g-1 respectively. Populations reached 10(10) for the mesophiles, psychrotrophs and Pseudomonadaceae and 10(7) CFU.g-1 for Enterobacteriaceae after 12 days of storage. Micrococcaceae, lactic acid bacteria and yeasts remained constant (10(3)-10(4) CFU.g-1. The majority of the bacterial isolates were identified as Pseudomonas fluorescens, Aeromonas caviae and Staphylococcus xylosus. The yeasts, which were most frequently isolated, were classified in the genus Cryptococcus. No pathogens such as Listeria monocytogenes and Salmonella were detected. Observations with low temperature scanning electron microscopy (LTSEM) indicated that the microorganisms were not present on the surface of healthy unbroken leaves. Alternatively, they were found in areas where the cuticle was broken and could be seen infecting the internal palisade parenchyma.

Babini G.S. et al. *Antimicrobial resistance amongst Klebsiella spp. collected from intensive care units in Southern and Western Europe in 1997-1998*. J Antimicrob Chemother. 2000; 45(2) : 183-9.p Abstract: A 1994 survey of 35 intensive care units (ICUs) in Western and Southern Europe found extended-spectrum beta-lactamases (ESBLs) in 220/966 (23%) klebsiellae. A follow-up survey from May 1997 to October 1998 collected klebsiellae from 24 ICUs, including 23 that participated in 1994. Twenty-one ICUs sent 433 eligible isolates, of which 110 (25%) had ESBLs. The prevalence of ESBLs had not changed significantly from 1994 but the proportion of ESBL-producers resistant to piperacillin/tazobactam had risen from 31% to 63% ($P < 0.001$), and most of this resistance was high level (MICs >/= 128 + 4 mg/L). The proportion of Klebsiella oxytoca isolates hyperproducing K1 beta-lactamase rose from 8% in 1994 to 21% in 1997-1998 ($P < 0.001$). Most klebsiellae (99%) were very susceptible to meropenem (mode MIC 0.03 mg/L) but three had decreased susceptibility (MICs 2-4 mg/L). These could not hydrolyse carbapenems. Aminoglycoside resistance was not significantly changed in prevalence from 1994; ciprofloxacin resistance occurred in 31% of ESBL-producers in both years, but had increased among non-producers (2% in 1994 versus 7% in 1997-1998, $P < 0.001$).

Bacchi A. et al. *Antimicrobial and mutagenic activity of some carbono- and thiocarbonohydrazone ligands and their copper(II), iron(II) and zinc(II) complexes.* J Inorg Biochem. 1999; 75(2) : 123-33.p Abstract: Several mono- and bis- carbono- and thiocarbonohydrazone ligands have been synthesised and characterised; the X-ray diffraction analysis of bis(phenyl 2-pyridyl ketone) thiocarbonohydrazone is reported. The coordinating properties of the ligands have been studied towards Cu(II), Fe(II), and Zn(II) salts. The ligands and the metal complexes were tested in vitro against Gram positive and Gram negative bacteria, yeasts and moulds. In general, the bisthiocarbonohydrazones possess the best antimicrobial properties and Gram positive bacteria are the most sensitive microorganisms. Bis(ethyl 2-pyridyl ketone) thiocarbonohydrazone, bis(butyl 2-pyridyl ketone)thiocarbonohydrazone and Cu(H2nft)Cl2 (H2nft, bis(5-nitrofuraldehyde)thiocarbonohydrazone) reveal a strong activity with minimum inhibitory concentrations of 0.7 microgram ml-1 against Bacillus subtilis and of 3 micrograms ml-1 against Staphylococcus aureus. Cu(II) complexes are more effective than Fe(II) and Zn(II) ones. All bisthiocarbono- and carbonohydrazones are devoid of mutagenic properties, with the exception of the compounds derived from 5-nitrofuraldehyde. On the contrary a weak mutagenicity, that disappears in the copper complexes, is exhibited by monosubstituted thiocarbonohydrazones.

Bachmann S. et al. *[Mycobacterium haemophilum infection in a patient with AIDS].* Dtsch Med Wochenschr. 1996; 121(39) : 1189-92.p Abstract: HISTORY AND FINDINGS: A 35-year-old HIV-infected man with a CD4 cell count of 100/microliter who had returned from a holiday in Spain presented with fever, chronic diarrhoea, cough, oral ulcers, subcutaneous nodules of about 1 cm in diameter and crusted skin ulcers of about 2 cm in diameter at his right arm, both wrists and buttocks. INVESTIGATIONS: Microscopic examination and culture of smears of a skin ulcer revealed acid-fast bacteria. Mycobacterial cultures of blood, sputum, urine and stool remained sterile. TREATMENT AND COURSE: Before the microorganisms were identified culturally, atypical mycobacteriosis was assumed and treatment with rifampicin, ethambutol, isoniazid and clarithromycin was started. Mycobacterium haemophilum was identified by using molecular biological techniques. Within 3 weeks the patient became afebrile and the skin ulcers healed completely. After a 7-week course, the treatment had to be stopped, and one month later painful subcutaneous nodules developed again at his arms and legs. A relapse of Mycobacterium haemophilum infection was confirmed by culture of a fine needle aspirate of a nodule. The same treatment was restarted and the nodules disappeared. CONCLUSIONS: Mycobacterium haemophilum, first identified in 1978, is an emerging pathogen in immunocompromised patients. Clinical manifestations usually are skin ulcers, subcutaneous nodules and subcutaneous abscesses, and less frequently, systemic infection. Treatment options of this life threatening disease have yet to be defined but therapeutic response to tuberculostatic combination therapy has been observed. Since Mycobacterium haemophilum is a fastidious organism, special laboratory methods are required for cultivation as well as for identification.

Backman M. et al. *The virgin population of Neisseria gonorrhoeae in Stockholm has decreased and antimicrobial resistance is increasing.* Genitourin Med. 1995; 71(4) : 234-8.p Abstract: AIMS—To investigate the evolution of chromosomal and plasmid mediated resistance for ampicillin and tetracycline of N gonorrhoeae strains in Stockholm during 1982-1993. METHODS—A total of 404 gonococcal strains isolated in 1982, 1987, 1990, 1992, 1993 were analysed for minimal inhibitory concentrations (MIC) of ampicillin and tetracycline and for plasmid content. MIC values were determined by the agar dilution method and plasmid preparations were performed using alkaline lysis. To detect additional gonococcal strains with tet(M) plasmids all strains isolated in 1988-1989 and 1991, in all 234 isolates, were analysed retrospectively for MIC values of tetracycline. If an MIC value of > or = 4.0 mg/l was recorded plasmid analysis was performed. RESULTS—Increased proportions of chromosomally mediated resistance to tetracycline ($p < 0.001$) as well as plasmid mediated resistance to both ampicillin ($p < 0.02$) and tetracycline were found in the later part of the study. In 1991 the first gonococcus with tet(M) plasmid was isolated in Sweden. The proportion of strains with chromosomally mediated resistance for ampicillin did not change during the study period. The proportion of

gonococcal strains with the 39 kb conjugative plasmid was increased in the later part of the study. CONCLUSIONS—The increased proportion of N gonorrhoeae strains with resistance to ampicillin and tetracycline is most likely due to importation of strains from areas with high prevalence of antibiotic resistant gonococci. The proportion of N gonorrhoeae strains with tet(M) plasmids is low in Sweden, but might increase in the same way as the proportion of PPNG strains has increased during 1982-1993.

Bae Y.S. et al. *Trp-Lys-Tyr-Met-Val-D-Met stimulates superoxide generation and killing of Staphylococcus aureus via phospholipase D activation in human monocytes.* J Leukoc Biol. 1999; 65(2) : 241-8.p Abstract: Among the phagocytic leukocytes, monocytes have the important role of clearing out parasitic microorganisms. They accomplish this through production of toxic metabolites of oxygen. Trp-Lys-Tyr-Met-Val-D-Met (WKYMVm), a peptide that stimulates phosphoinositide (PI) hydrolysis in human leukocytes, including monocytes, binds to a unique cell surface receptor and stimulates superoxide generation, killing of Staphylococcus aureus, and activation of phospholipase D (PLD) in human monocytes. Preincubation of the cells with a PI-specific phospholipase C (PLC) inhibitor (U-73122), protein kinase C inhibitor (GF109203X), or intracellular Ca2+ chelator (BAPTA/AM) before the peptide stimulus totally inhibits the peptide-induced PLD activation and superoxide generation. On the other hand, tyrosine kinase inhibitor genistein only partially inhibits the peptide-induced processes. The peptide-induced bacteria killing activity shares regulatory mechanisms for PLD activation with the superoxide generation, which is inhibited in the presence of 1-butanol. We suggest that the peptide stimulates PLD downstream of PLC activation and PLD activation in turn is essential for the peptide-induced immunological functions such as the superoxide generation and killing of bacteria by human monocytes.

Bager F. *DANMAP: monitoring antimicrobial resistance in Denmark.* Int J Antimicrob Agents. 2000; 14(4) : 271-4.p Abstract: The objectives of the Danish Integrated Antimicrobial Resistance Monitoring and Research Programme (DANMAP) are to monitor trends in resistance among bacteria from animals, food and humans, to monitor the consumption of antimicrobial agents and to determine the association between consumption and occurrence of resistance and to model transmission of resistance from animals to humans. DANMAP is based on the examination of representative bacterial isolates of animal and human pathogens, of zoonotic bacteria and of indicator bacteria. For food animals, both diseased and the healthy populations are studied. Isolates from all three reservoirs are examined for their susceptibility to a basic panel of antibiotics that includes representatives of the major classes of compounds, making comparison of resistance levels in the reservoirs possible. Isolates are stored in a strain collection and are available for further study. The data are stored in databases as MIC values or mm inhibition zones with all identifiers. A system for recording all use of the veterinary medicines, VETSTAT, is currently under implementation. For production animals, the consumption will be recorded for each herd, providing a basis for detailed modelling of the effect of consumption on resistance.

Bager F. et al. *Design of a system for monitoring antimicrobial resistance in pathogenic, zoonotic and indicator bacteria from food animals.* Acta Vet Scand Suppl. 1999; 92 : 77-86.p Abstract: DANMAP is a Danish programme for integrated monitoring of and research on antimicrobial resistance in bacteria from food animals, food and humans. The paper describes how bacteria from broilers, pigs, and cattle are collected, as well as the procedures for data handling and presentation of results. The bacteria from animals include certain pathogens, selected so that they are representative for submissions to Danish diagnostic laboratories, as well as zoonotic bacteria (Campylobacter, Salmonella and Yersinia) and indicator bacteria (E. coli, E. faecium and E. faecalis), from samples collected at abattoirs. The latter samples are selected so that they are representative of the respective animal populations. Therefore, the apparent prevalence of antimicrobial resistance in the populations may be calculated. The isolates are identified to species level and the results of susceptibility testing are stored as continuous variables. All isolates are maintained in a strain collection so that they are available for subsequent research projects. The data handling facilities makes it possible to present results as percent resistant isolates or as the apparent prevalence of resistance in the population, or alternatively as graphical distributions of mm inhibition zones or MIC values. Computer routines have been established that make it possible to detect specific phenotypic expressions of resistance that may be of particular interest.

Baggesen D.L. et al. *Characterization of Salmonella enterica serovar typhimurium DT104 isolated from Denmark and comparison with isolates from Europe and the United States.* J Clin Microbiol. 2000; 38(4) : 1581-6.p Abstract: A total of 136 isolates of Salmonella enterica serovar Typhimurium DT104 from Denmark (n = 93), Germany (n = 10), Italy (n = 4), Spain (n = 5), and the United Kingdom (n = 9) were characterized by antimicrobial resistance analysis, plasmid profiling, pulsed-field gel electrophoresis (PFGE) with the restriction enzymes XbaI and BlnI, and analysis for the presence of integrons and antibiotic resistance genes. The isolates from Denmark were from nine pig herds, while the isolates from other countries were both of animal and of human origin. All but 10 isolates were resistant to ampicillin, chloramphenicol, spectinomycin, streptomycin, sulfonamides, and tetracycline. Five isolates from the United Kingdom and Spain were sensitive to all antibiotics examined, whereas four isolates from the United Kingdom and the United States were also resistant to one or more of the antibiotics, namely, gentamicin, neomycin, and trimethoprim. All but two strains had the same PFGE profiles when the XbaI restriction enzyme was used, while seven different profiles were observed when the BlnI restriction enzyme was used. Different dominating BlnI types were observed among European isolates compared with the types observed among those from the United States. All the isolates harbored common 95-kb plasmids either alone or in combination with smaller plasmids, and a total of 11 different plasmid profiles were observed. Furthermore, all but one of the multidrug-resistant isolates contained two integrons, ant (3")-Ia and pse-1. Sensitive isolates contained no integrons, and isolates that were resistant to spectinomycin, streptomycin, and sulfonamides had only one integron containing ant (3")-Ia. When restriction enzyme BlnI was used, the 14 isolates from one of the nine herds in Denmark showed unique profiles, whereas isolates from the remaining herds were homogeneous. Among isolates from seven of nine herds, the same plasmid profile (95 kb) was observed, but isolates from two herds had different profiles. Thus, either PFGE (with BlnI) or plasmid profiling could distinguish isolates from three of nine pig herds in Denmark. The epidemiological markers (antimicrobial susceptibility testing, plasmid profiling, and PFGE) applied demonstrated high in vivo stability in the Danish herds. This may indicate that some different strains of multidrug-resistant S. enterica serovar Typhimurium DT104 have been introduced into Danish food animal herds. The presence of isolates from six different countries with similar profiles by PFGE with XbaI and highly homogeneous profiles by PFGE with BlnI indicate that multidrug-resistant S. enterica serovar Typhimurium DT104 has probably been spread clonally in these countries. However, some minor variation could be observed by using plasmid profiling and profiling by PFGE with BlnI. Thus, a more sensitive technique for subtyping of strains of DT104 and a broader investigation may help in elucidating the epidemiological spread of DT104 in different parts of the world.

Bagwell C.E. et al. *Potentially lethal complications of central venous catheter placement.* J Pediatr Surg. 2000; 35(5) : 709-13.p Abstract: BACKGROUND: Placement of central venous catheters, although often considered to be a relatively safe and "junior"-level procedure, may be associated with life-threatening complications. METHODS: A recent surgical death associated with placement of a central venous

catheter at this Institution led to submission of a questionnaire to pediatric surgeons referenced through the American Pediatric Surgical Association directory regarding knowledge of similar incidents and information regarding catheter placement-related complications. RESULTS: Results to this response, although anecdotal, provided data regarding complications of an acute nature, which fell into the categories of pneumothorax, hydrothorax, cardiac tamponade, and hemothorax. Of 10 children with cardiac tamponade, 7 were infants, and most complications were associated with needle stick for access, with symptoms developing within minutes up to 12 hours after the procedure. Drainage of the tamponade was performed by aspiration alone in 3 cases; surgical drainage in 6 children resulted in survival in 9 of the 10 patients. Hemothorax was described in 19 patients and appeared to be more common in children in the 1- to 6-year age group, usually associated with percutaneous access techniques. Thoracotomy for hemothorax was performed in 16 children with 11 survivors. Vascular injury to subclavian artery, vein, or superior vena caval were noted in most at operation. CONCLUSIONS: Although data included in this review are entirely anecdotal and not subject to scientific scrutiny or analysis, certain conclusions appear evident. Inherent risks of central venous catheters are intrinsic and should be discussed with the family in obtaining preoperative consent, including life-threatening risks that may necessitate urgent surgical intervention (by thoracotomy or other means). Certain technical aspects of the procedure should be rigidly followed with an experienced surgeon in attendance throughout the procedure. Rapid evaluation should be performed for any unexplained problems that occur in the operating theatre or during the early postoperative period.

Bahrmand A.R. et al. *Detection and identification of non-tuberculous mycobacterial infections in 6,472 tuberculosis suspected patients.* Scand J Infect Dis. 1996; 28(3) : 275-8.p Abstract: Between March 1993 and March 1994, 82 patients with infection by non-tuberculous mycobacteria (NTM) and 443 patients with tuberculosis (TB) were registered among 6,472 patients with suspected tuberculosis. Skin-test reactivity to purified protein derivative (PPD) in patients demonstrated indurations of 10-14 mm or more for the majority of patients in both groups. Most patients with NTM infection had abnormal chest roentgenograms showing sporadic infiltrations, nodular abscesses, and cavities resembling TB radiological evidence. The similarity in age range, PPD skin reaction, and radiological evidence in patients infected with NTM or Mycobacterium tuberculosis (MTB) can mislead the physician. Some NTM species were recovered more often than others. Mycobacterium fortuitum from 22 clinical specimens (26.8%); Mycobacterium gastric 19 (23.1%); and Mycobacterium terrae complex 15 (18.3%). The antimicrobial drug susceptibility tests of the isolated organisms showed that 42 (9.5%) isolates of MTB were resistant to isoniazid and 31 (7.0%) to streptomycin. a few strains (1.3%) were identified as being resistant to a combination of 3 primary drugs. These findings suggest that drug-resistant mycobacterial infections are becoming an important problem in the region.

Baida G. et al. *Complete nucleotide sequence and molecular characterization of hemolysin II gene from Bacillus cereus.* FEMS Microbiol Lett. 1999; 180(1) : 7-14.p Abstract: Hemolysin II gene from Bacillus cereus VKM-B771 has been sequenced. The deduced primary translation product consists of 412 amino acid residues which corresponds to the protein with an M(r) of 45.6 kDa. The predicted mature Hly-II protein (residues 32 to 412) is of 42.3 kDa, which is in close agreement with the mini-cell electrophoresis analysis. Hly-II deletion variant lacking 96 C-terminal residues still has hemolytic activity. The protein primary structure analysis revealed no homology with any known Bacillus cytolysins. Significant general homology (31-28% identity) was found between the hemolysin II and Staphylococcus aureus alpha-toxin, gamma-hemolysin (HlgB), and leukocidins (LukF, LukF-R, LukF-PV). The data suggest that hemolysin II belongs to the group of beta-channel forming cytolysins.

Bajaj J.K. et al. *Prevalence of resistant Staphylococcus aureus at Aurangabad*. J Commun Dis. 1999; 31(3) : 173-6.p Abstract: Seven hundred and eighty three isolates of Staphylococcus aureus isolated from pus (586), blood (78), sputum (25), urine (23), cerebrospinal fluid (23) and various other body fluids (48) were subjected to in-vitro antimicrobial susceptibility testing by modified Kirby-Bauer method. Almost all the isolates were resistant to penicillin (99.62 per cent) and ampicillin (99.62 per cent). Resistance to erythromycin, tetracycline and cotrimoxazole was observed in 88.5, 87.62, and 80.85 per cent isolates respectively. Resistance to gentamicin was 68.32 per cent. Resistance to most of the commonly used antimicrobial agents indicates a need to replace these drugs with other agents and maintenance of surveillance to detect changing patterns of resistance.

Baker C.N. et al. *Evaluation of Alamar colorimetric broth microdilution susceptibility testing method for staphylococci and enterococci*. J Clin Microbiol. 1996; 34(11) : 2654-9.p Abstract: We compared the results of the Alamar broth microdilution susceptibility testing method with the results of the National Committee for Clinical Laboratory Standards reference broth microdilution method for 119 gram-positive organisms. The strains were tested for their susceptibilities to 20 antimicrobial agents. Only appropriate antimicrobial agents were evaluated for each species of bacteria. Absolute categorical agreement between the reference method and the test method was 91.5% for enterococci, 99.8% for oxacillin-susceptible staphylococci, and 97.4% for oxacillin-resistant staphylococci. Essential agreement (percent complete agreement plus percent minor errors) was > 99% for all organisms tested. The results for enterococci showed no very major errors, one major error with ofloxacin, and numerous minor errors with the quinolones. However, all except one of the minor errors were within +/- 1 log2 dilution of the reference result. For staphylococci, only 2 very major errors (one each with chloramphenicol and oxacillin), 1 major error (chloramphenicol), and 15 minor errors (multiple drugs) were observed. The Alamar colorimetric system was easy to use and the results were easy to read. It appears to be an acceptable method for antimicrobial susceptibility testing of staphylococci and enterococci.

Baker J.J. et al. *Managing the cost of care: a predictive study to identify critical care patients at risk for nosocomial pneumonia*. J Health Care Finance. 2000; 26(3) : 73-82.p Abstract: Nosocomial infections represent a major health problem and can have a significant impact on the cost of treating a patient. Hospital-acquired pneumonia (HAP) is the second most common nosocomial infection in the United States and the leading cause of death due to a nosocomial infection. The high prevalence of HAP and its significant impact on increased length of stay and incremental treatment costs identify nosocomial pneumonia (NP) as a key component in managing the total cost of care. The study's objective was to develop a predictive tool for identifying those adult patients in critical care (CC) who are at greatest risk of developing NP to better manage the costs of care. The authors also expected to determine the expected probability of a patient developing NP in CC. A prospective study of longer stay critical care unit (CCU) patients was performed in nine U.S. CCUs. There were no interventions in the study. Development was based on variables common to CC and specific patient profile risk factors. Twelve statistically significant and clinically meaningful risk factors were identified and placed in a sequential cascade fashion. The positive predictive value of the sequential decision process and corresponding tool was 87.03 percent.

Bal C. *Increasing antimicrobial resistance in STDs and the need for surveillance: Neisseria gonorrhoeae as a model*. FEMS Immunol Med Microbiol. 1999; 24(4) : 447-53.p Abstract: Neisseria gonorrhoeae has a rising trend of resistance against antimicrobials. Today, third generation cephalosporins are the only antibiotics for treatment of gonorrhea against which there is no resistance in gonococci. On the other hand, decreased susceptibility against this group, including ceftriaxone, has already been observed. This historically famous pathogen deserves current attention and is reviewed here with respect to its

resistance mechanisms and patterns, and the problems concerning standardization of its susceptibility testing are discussed.

Balas D. et al. *[Enterococci isolated from blood (1989-1993): evolution of antibiotic susceptibility].* Enferm Infecc Microbiol Clin. 1995; 13(8) : 455-9.p Abstract: BACKGROUND:The incidence of enterococci infection is on the rise.Treatment is ever more difficult due to the intrinsic resistance to many antimicrobial and their ability to acquire new resistance.The aim of this study was to: a) determine the antibiotic sensitivity of 80 enterococci strains isolated from blood in 1989-1993 and, b) detect the possible changes in the resistance patterns over this period. METHODS: Eighty enterococci strains isolated from blood cultures, since 1989 to 1993 were studied. Sixty-nine were Enterococcus faecalis and 11 Enterococcus faecium.The minimum inhibitory concentrations (MIC) of 11 antimicrobial was determined by the agar dilution method.The Mantel-Haenszel and Fisher tests were used for statistical analysis of the results. RESULTS: All the strains were sensitive to ampicillin and vancomycin. A high level of resistance (HLR) to gentamycin and streptomycin was observed in 18.7% and 23.7%, respectively of the strains. Fourteen strains (17.7%) presented HLR to both antibiotics. Approximately one third of the strains were resistant to the fluoroquinolones tested. Analysis of the results by year only demonstrated a significant lineal trend of resistance for ofloxacin ($p = 0.014$) and a significant difference between the years for ciprofloxacin ($p = 0.017$). Strains with an MIC > or = 16 mg/l of fluoroquinolones presented HLR to gentamycin ($p < 0.001$) and to all the aminoglucosides ($p < 0.001$). CONCLUSIONS:The incidence of antibiotic resistance of enterococci isolated from blood in the authors hospital is generally low and, with the exception of the fluoroquinolones, did not demonstrate any significant differences during the period studied. Periodic updating and analysis of sensitivity results are required to monitor any changes which may occur over time.

Balas D. et al. *[Prevalence of antimicrobial resistance in enterococci isolated from blood in Madrid (1994-1995)].* Enferm Infecc Microbiol Clin. 1997; 15(1) : 22-3.p Abstract: BACKGROUND: The aim of this study was to evaluate the antimicrobial resistance of enterococci isolated from blood samples in three hospitals in Madrid (Spain) from 1994 to 1995. METHODS: One hundred strains, 83 Enterococcus faecalis, 15 E. faecium, and 2 E. durans, isolated from January 1994 to April 1995 were studied. The minimum inhibitory concentrations (MIC) of 11 antimicrobians were determined by the agar dilution method. RESULTS: Four percent of the strains were resistant to ampicillin and 7% to penicillin. Ninety-two percent were sensitive to vancomycin.The percentage of strains with a high level of resistance (HLR) to some aminoglucoside was 60%. HLR was observed to gentamycin in 41%, to streptomycin in 46% and to kanamycin in 58% of the strains. Half of the isolates were resistant to the fluoroquinolones tested. HLR was significantly associated with aminoglucosides with HLR (MIC > or = 16 mg/l) to fluoroquinolones in the strains studied ($p < 0.001$). CONCLUSIONS:The incidence of resistance to ampicillin and vancomycin is low and very high to aminoglucosides and fluoroquinolones. There is also a very significant association between HLR to fluoroquinolones and HLR to aminoglucosides.

Baldeschi L. et al. *A comparison of skin storage methods for oculoplastic surgery.* Eye. 1998; 12 (Pt 4) : 714-6.p Abstract: PURPOSE:To assess the level of contamination of full-thickness skin grafts stored with or without an antibiotic cover. METHODS: Full-thickness skin grafts were harvested from 40 bilateral upper lid blepharoplasties. Before surgery the face was sterilised, the head of the patient was packed with sterile, single-use surgical drapes and the whole face was left exposed. The harvested full-thickness skin grafts were conserved in sterile containers at 4 degrees C for 6 days, rolled in gauze moistened with either 4 ml of sterile saline solution (group I) or with 4 ml of gentamicin solution (2 mg/ml) (group II). The degree of contamination, expressed in colony forming units (CFU), was evaluated on days 2, 3, 4, 5 and 6. Identification of the microorganisms was done to species level following standard procedures and commercial methods. RESULTS: In group I 2 grafts (5%) were negative during the whole observation period while the other 38 grafts (95%) presented a degree of contamination ranging from 10(2) to 10(4) CFU. Microorganisms isolated were: Staphylococcus epidermidis (24 cases), Staphylococcus aureus (5 cases), Staphylococcus saprophyticus (2 cases), Pseudomonas aeruginosa (4 cases), Serratia liquefaciens (1 case) and Klebsiella oxytoca (2 cases). In group II, 26 grafts (65%) were negative during the whole observation time while in 14 cases (35%) a few colonies (3 to 6) of Candida albicans were isolated on day 2 and remained constant in number for the whole observation time. CONCLUSIONS: The storage of full-thickness skin graft with an antibiotic cover is more reliable than the storage of full-thickness skin graft without an antibiotic cover.

Baliellas C. et al. *[Infectious gastroenteritis in relapses of inflammatory bowel disease. Therapeutic implications].* Rev Esp Enferm Dig. 1996; 88(6) : 419-22.p Abstract: The incidence and clinical importance of infectious gastroenteritis was studied in 67 consecutive relapses of inflammatory bowel disease (IBD). A stool culture was done in every case before starting treatment. Stool culture was positive in 6 relapses (8.9%): Four were exacerbations of ulcerative colitis and two of Crohn's disease (8.8% in ulcerative colitis vs 9% in Crohn's disease; NS). The microorganisms isolated were Campylobacter jejuni in three cases, Salmonella enteritidis in two and Staphylococcus aureus in one case. There were not clinical differences between patients with positive and negative stool culture. Treated with antibiotics, stool cultures became negative in all of them but only in three the disease was controlled.The other three had to be treated with corticosteroids to achieve remission. We conclude that stool culture should be practised in all relapses of IBD and in case of positivity, antibiotic therapy should be started. With this approach the use of corticosteroids can be avoided in some patients.

Balkwill D.L. et al. *Phylogenetic characterization of bacteria in the subsurface microbial culture collection.* FEMS Microbiol Rev. 1997; 20(3-4) : 201-16.p Abstract: The Subsurface Microbial Culture Collection (SMCC) was established by the U.S. Dept. of Energy (DOE) and contains nearly 10,000 strains of microorganisms (mostly bacteria) isolated from terrestrial subsurface environments. Selected groups of bacterial isolates from three sample sites situated above geochemically and hydrologically different subsurface environments have been characterized by phylogenetic analysis of 16S ribosomal RNA (rRNA) gene nucleotide sequences. Among these isolates were members of six major phylogenetic groups of bacteria: the high-G+C and low-G+C Gram-positive bacteria; the alpha-, beta-, and gamma-subdivisions of the Proteobacteria; and the Flexibacter/Cytophaga/Bacteroides group. A small number of the SMCC strains may be members of new bacterial genera, but most of them could be placed with reasonable confidence into more than 35 previously described genera.The majority of the Gram-positive isolates were species of Arthrobacter, Bacillus, or Streptococcus, whereas Acinetobacter, Comamonas, Pseudomonas, Sphingomonas, and Variovorax were among the most frequently encountered Gram-negative genera. A high proportion of the strains were placed in fewer than 10 genera, implying that there is substantial duplication within the SMCC at the genus level. When groups of isolates assigned to Acinetobacter, Arthrobacter, or Sphingomonas were analyzed in more detail, however, it was found that each group consisted of subgroups of strains that probably differed at the species level. Restriction endonuclease analysis (applied to the strains from one sample site) indicated that additional diversity was present at the strain level. Most of the SMCC isolates assigned to some genera (e.g., Acinetobacter) were very closely related to previously described species in those genera, but most of the isolates assigned to other genera (e.g., Arthrobacter and Sphingomonas) appeared (or were shown) to be new species, thereby indicating that a reasonable amount of novelty is present within the SMCC at the species level.

Baltch A.L. et al. *Comparison of inhibitory and bactericidal activities and postantibiotic effects of LY333328 and ampicillin used singly and in combination against vancomycin-resistant Enterococcus faecium.* Antimicrob Agents Chemother. 1998; 42(10) : 2564-8.p Abstract: One hundred ninety-five individual vancomycin-resistant Enterococcus faecium (VRE) isolates from five upstate New York hospitals were studied for antimicrobial susceptibilities to LY333328, quinupristin-dalfopristin, teicoplanin, ampicillin, and gentamicin. LY333328 was the most active antibiotic against VRE. The effect of media and methods on the antibacterial activity of LY333328, its synergy with ampicillin, and the postantibiotic effects (PAE) of LY333328 and ampicillin were evaluated. In microdilution tests, the MIC of LY333328 at which 90% of the isolates were inhibited (MIC90) was 2 microg/ml in Mueller-Hinton II (MH II) broth and 1 microg/ml in brain heart infusion (BHI) broth. In contrast, on MH II agar the MIC90 was 4 microg/ml and on BHI agar it was >16 microg/ml. Bactericidal activity was observed for most strains at concentrations from 8 to >/=133 times the MIC of the tube macrodilution in MH II broth. A bactericidal effect of LY333328 plus ampicillin was demonstrated in time-kill studies, but there was great strain-to-strain variability. By the MH II agar dilution method, bacteristatic synergy (defined as a fractional inhibitory concentration of <0.5) with LY333328 and ampicillin was demonstrated for 61% of the strains tested. Under similar conditions, there was synergy with LY333328 and quinupristin-dalfopristin or gentamicin for 27 and 15% of the strains tested, respectively. The PAE of LY333328 was prolonged (23.0 h at 10 times the MIC). However, 50% normal pooled human serum decreased the PAE to 12.2 h at 10 times the MIC. Test conditions and media had a considerable effect on VRE susceptibilities to LY333328. The prolonged PAE of LY333328, a potent new bactericidal glycopeptide, and its synergy with ampicillin in a large proportion of strains suggest that further evaluation of this drug in pharmacokinetic studies and experimental infections, including those with VRE, is warranted.

Banfi Pacheco A. et al. *Determinación de receptores de haptoglobina y proteína C reactiva en linfocitos de pacientes con patología autoinmune e infecciosa.* Rev. chil. infectología. 1995; 12(2) : 72-9.p Abstract: En la actualidad, se desconoce el rol del aumento de proteína C recativa (PCR) y haptoglobina (Hp) en la respuesta de fase aguda. Algunos autores han postulado la posibilidad que estas proteínas intervengan en la regulación del sistema inmune. Nuestro estudio estuvo orientado a demostrar la presencia de receptores para Hp y PCR en linfocitos procedentes de ni os sanos y niños con patología infecciosa y autoinmune. Para este efecto, se obtuvieron células mononucleares de 48 niños (24 sanos, 14 con infecciones demostradas y 10 con enfermedades autoinmune), se incubaron por 72 horas a 37 grados Celsius y 5 por ciento de CO2, con estímulo de fitohemaglutinina (PHA) y con diferentes concentraciones de PCR y Hp en el medio. Se separaron las subpoblaciones CD4 y CD8 mediante anticuerpos monoclonales unidos a partículas magnéticas y se analizó la presencia de receptores a distintos tiempos (0, 24, 48 y 72 horas) mediante una técnica de inmunofluorescencia indirecta (AU).

Bange F.C. et al. *Recovery of mycobacteria from patients with cystic fibrosis.* J Clin Microbiol. 1999; 37(11) : 3761-3.p Abstract: Despite decontamination, overgrowth by pseudomonads renders cultural isolation of mycobacteria from respiratory specimens of patients with cystic fibrosis (CF) difficult or impossible. We performed a prospective study by comparing levels of reduction of overgrowth and recovery of mycobacteria using either pretreatment with N-acetyl-L-cysteine (NALC)-NaOH alone or pretreatment with NALC-NaOH and then with oxalic acid. From 406 specimens of 148 CF patients, 11 specimens were positive for mycobacteria, 5 of which grew mycobacteria after decontamination by either procedure. Three specimens grew mycobacteria only after decontamination with NALC-NaOH, whereas three specimens grew mycobacteria only after treatment with NALC-NaOH followed by oxalic acid but were overgrown after decontamination with NALC-NaOH. Thus, inactivation of mycobacteria by the more aggressive oxalic acid treatment offsets its beneficial effect of reducing the proportion of cultures overgrown with microorganisms other than mycobacteria.

Bangtrakulnonth A. et al. *Incidence of new Salmonella serovar (S. ratchaburi) in Thailand.* Southeast Asian J Trop Med Public Health. 1999; 30(4) : 776-8.p Abstract: Eighteen strains of Salmonella group E from stool samples were confirmed as Salmonella new serovar. 3, 10 : Z35 : 1, 6 by Centre International des Salmonella, Institut Pasteur, Paris, WHO Collaborating Center for Salmonella, Atlanta, USA and Salmonella-Zentrale Hygienischen Institut, Hamburg, Germany. The name of this new serovar was proposed as S. ratchaburi according to the place of its first isolation in Ratchaburi province. The new serovar of Salmonella was sensitive to many antimicrobial agents except streptomycin and erythromycin.

Bantar C. et al. *Three-year surveillance study of nosocomial bacterial resistance in Argentina. The Antimicrobial Committee; and the National Surveillance Program (SIR) Participants Group.* Int J Infect Dis. 2000; 4(2) : 85-90.p Abstract: INTRODUCTION: A national surveillance program (SIR) was introduced in 1996 in Argentina by the Antimicrobial Committee of the Argentinean Society for Microbiology to assess bacterial resistance. The present study reports the rates of nosocomial bacterial resistance found by this program. METHODS: A 2-month point-prevalence study was conducted twice yearly (i.e., April-May and October-November) from 1996 to 1998, by 27 Argentinean centers. Susceptibility testing was carried out by the disk diffusion method following the National Committee for Clinical Laboratory Standards guidelines. RESULTS: In all, 6343 isolates recovered from 5603 inpatients (> or =48-hr hospitalization) were included. Methicillin resistance was 58% and 56% in Staphylococcus aureus and coagulase-negative staphylococci (CNS), respectively. Although no vancomycin resistance was found in staphylococci, 2% and 8% of the S. aureus and CNS strains, respectively, proved resistant to teicoplanin. No ampicillin resistance was displayed by Enterococcus faecalis. High-level gentamicin and streptomycin resistance in enterococci were 33% and 37%, respectively. Acquired glycopeptide resistance in enterococci emerged in 1997 (2%). Imipenem resistance in Acinetobacter spp and Pseudomonas aeruginosa was 9% and 21%, respectively. Among Enterobacteriaceae, 1% and 5% of the Klebsiella pneumoniae and Enterobacter cloacae isolates, respectively, proved resistant to imipenem. Ceftazidime and cefepime resistance was found in 63% and 33% of the E. cloacae strains. Resistance to extended-spectrum cephalosporins was shown by 48%, 26%, and 8% of the K. pneumoniae, Proteus mirabilis, and Escherichia coli isolates, respectively. CONCLUSIONS: The alarming rates of resistance found in this study provide compelling evidence of the need for more rational use of antimicrobial agents in Argentina.

Baquero F. *Evolving resistance patterns of Streptococcus pneumoniae: a link with long-acting macrolide consumption?* J Chemother. 1999; 11 Suppl 1 : 35-43.p Abstract : The Alexander Project indicates an increase in the prevalence of S. pneumoniae resistance to macrolide antibiotics. In some centers, the prevalence of S. pneumoniae macrolide resistance exceeds that of penicillin resistance. Centers with a high level of macrolide resistance tend to also have high levels of penicillin resistance. Antimicrobial use may be an important driver of resistance. The application of pharmacodynamic concepts suggests that bacterial exposure to low and prolonged concentrations of macrolides may have a role in the selection of resistance. Analysis of macrolide prescribing and resistance patterns indicates a correlation between increasing macrolide resistance and the increased use of newer, long-acting macrolides, although further study is required to investigate the causality of this correlation. In order to attempt to prevent the further spread of resistance, antibiotic choice should maximize the opportunity for bacterial eradication.

Baquero F. et al. *Antimicrobial resistance of 914 beta-hemolytic streptococci isolated from pharyngeal swabs in Spain: results of a 1-year (1996-1997) multicenter surveillance study. The Spanish Surveillance Group for Respiratory Pathogens.* Antimicrob Agents Chemother. 1999; 43(1) : 178-80.p Abstract: A nationwide susceptibility surveillance study of beta-hemolytic streptococcal isolates from pharyngeal swabs obtained in 11 Spanish hospitals between May 1996 and April 1997 against 12 antibiotics was carried out. Of the isolates 86% (786 of 914 isolates) were group A and 8.4% (77 of 914 isolates) were group C. No resistance was found to beta-lactam antibiotics, but significant differences ($P < 0.001$) with respect to lack of susceptibility to macrolides were found between groups (27% for group A and 12% for group C) and between seasons (13.2% in summer and 31.7% in winter). Most of these isolates displayed the M phenotype (low-level resistance to erythromycin and susceptibility to clindamycin).

Baquero F. et al. *Antimicrobial resistance of 1,113 Streptococcus pneumoniae isolates from patients with respiratory tract infections in Spain: results of a 1-year (1996-1997) multicenter surveillance study. The Spanish Surveillance Group for Respiratory Pathogens.* Antimicrob Agents Chemother. 1999; 43(2) : 357-9.p Abstract: A nationwide susceptibility surveillance of 1,113 Streptococcus pneumoniae isolates was carried out and found the following percentages of resistance: cefuroxime, 46%; penicillin, 37%; macrolides, 33%; aminopenicillins, 24%; cefotaxime, 13%; and ceftriaxone, 8%. A significant ($P < 0.05$) seasonality pattern for beta-lactam antibiotics was observed. Resistance to macrolides was higher ($P < 0.05$) in middle-ear samples. Higher percentages of resistance to cefuroxime and macrolides were observed among penicillin-intermediate and -resistant strains, whereas high frequencies of resistance to aminopenicillins and expanded-spectrum cephalosporins were observed only among penicillin-resistant strains.

Barakat K. et al. *Permanent transfemoral pacemaker implantation is the technique of choice for patients in whom the superior vena cava is inaccessible.* Pacing Clin Electrophysiol. 2000; 23(4 Pt 1) : 446-9.p Abstract: We describe transfemoral pacemaker implantation in three patients in whom pacing via the superior vena cava was not possible or suboptimal. The first was an 88-year-old man with superior vena cava obstruction presenting with fractured epicardial pacing leads. Recent pneumonia increased the risks of a general anesthetic. The second patient was a 57-year-old man who was intolerant of a pectorally sited pacemaker because of the thinness of his anterior chest wall. The third patient was a 69-year-old woman who presented with an infected eroding pectorally sited pacemaker. Scarring secondary to a previous pacemaker infection rendered the contralateral pectoral site inaccessible. Since the subclavian route was inaccessible (case 1) or suboptimal (case 2 and 3), we implanted transvenous pacemakers via the femoral route, which was safe, and effective, during a 6-month follow-up period.

Baran J. et al. *[Evaluation of interactions between strains of S. aureus isolated from different clinical specimens with peripheral blood phagocytic cells].* Med Dosw Mikrobiol. 1999; 51(1-2) : 37-46.p Abstract: The aim of this study was to investigate the interactions occurring between peripheral blood phagocytes and strains of S. aureus isolated from different clinical specimens (blood, respiratory tract, pus). To evaluate the sensitivity of microorganisms to bactericidal activity of phagocytes, monocytes and granulocytes separated from peripheral blood by standard density gradient and by counter-current centrifugal elutriation were incubated with suspensions of opsonized bacteria. In parallel, the viability of phagocytes was examined by flow cytometry, and the ability of bacteria to trigger reactive oxygen intermediates (ROI) production was evaluated by chemiluminescence measurement. To investigate efficiency of phagocytosis, bacteria were labelled with fluorescein isothiocyanate (FITC) and the percentage of cells containing FITC-labelled bacteria was analysed by flow cytometry. The data obtained show that strains of S. aureus originated from different clinical specimens, differ in their sensitivity to bactericidal activity of phagocytes—strains isolated from the blood show the highest, but strains isolated from respiratory tract show the lowest sensitivity for killing. These strains differ too in their ability to trigger monocyte CL response. Contrary, there was no difference in toxicity of bacteria against phagocytes. Strains isolated from peripheral blood showed significant negative correlation between the ability to trigger CL response and toxicity against phagocytes.

Baran-Raunstrup K. et al. *Characteristics of Staphylococcus aureus isolates from atopic dermatitis with reference to proteolytic activity.* Acta Microbiol Pol. 1998; 47(2) : 167-75.p Abstract: Staphylococcus aureus strains from atopic dermatitis (AD) patients were investigated. Diversities of biological properties, strain relationships and/or group tendencies between strains were analysed. Fifty four S. aureus strains were divided into seven biotypes using a standard biochemical API Staph system. The largest population (twenty two isolates, 40.7%) belonged to biotype A No. 6716153. Using a standard phage set S. aureus isolates were typed into three groups: I, II and III. However, twenty seven (50.0%) isolates belonged to group No. III. Production of proteolytic enzymes was expressed by all isolates, and 87.0% showed high or moderate proteolytic activity. Also alpha or beta haemolysins production by 83.0% of the strains was demonstrated. Antimicrobial susceptibility for each strain was analysed using fifteen antibiotics. Most isolates were sensitive to chloramphenicol (98.0%), neomycin (98.0%) and fucidin (88.0%) and were resistant to ampicillin, oxacillin and rondomycin (< 20.0%). No isolate was sensitive to all antibiotics of our study. Obvious correlations were not observed between biochemical types, phage types, haemolysin production and antibiotic resistance pattern but proteolytic activity was demonstrated by most strains in each test.

Barberis I.L. et al. *[Survey of sexually transmitted diseases in the region of Rio Cuarto].* Medicina (B Aires). 1998; 58(5 Pt 1) : 469-73.p Abstract: Sexually transmitted diseases (STD) are acquired mainly through sexual intercourse, being one of the most frequent groups of infectious diseases worldwide and consequently an important public health problem. The aim of this paper was to determine the current state of STD and to compare different diagnostic methods in the population studied. A total of 1060 samples from vaginal flows, endocervical material and urethral discharge were studied during 3 years. Of the total samples, 583 were positive, 493 in women and 90 in men. Microorganisms found in women were: Gardnerella vaginalis (39.3%), Candida albicans (21.1%), Trichomonas vaginalis (17.3%), Candida trachomatis (11.3%), Neisseria gonorrhoeae (3.2%): Mycoplasma hominis and Ureaplasma urelyticum (6.5%) and Treponema pallidum (1.4%), the associations found were, Gardnerella vaginalis with Trichomonas vaginalis 5.5%; Gardnerella vaginalis with Candida albicans 4.9%; Trichomonas vaginalis with Neisseria gonorrhoeae (2.2%) and Gardnerella vaginalis with Chlamydia trachomatis (1.9%). In men, gonococcal urethritis (UG) represented 37.7% non UG 55.6% and Treponema pallidum 6.7%. These results indicate a decrease in sifilis and in UG when compared to previous studies showing that gonococcal cervicitis had also decreased. We found an important increase in the prevalence of urethritis and non gonococcal cervicitis in agreement with world statistics which consider these diseases as the most common venereal ones. It is necessary to increase the search for Chlamydia trachomatis in pregnant women due to vertical transmission. It should be noted that, in spite of certain fluctuations, the incidence of the STD in our area is still unacceptably high.

Barbut F. et al. *Antimicrobial susceptibilities and serogroups of clinical strains of Clostridium difficile isolated in France in 1991 and 1997.* Antimicrob Agents Chemother. 1999; 43(11) : 2607-11.p Abstract: Glycopeptides (vancomycin and teicoplanin) and metronidazole are the drugs of choice for the treatment of Clostridium difficile infections, but trends in susceptibility patterns have not been assessed in the past few years. The objective was to study the MICs of glycopeptides and metronidazole for unrelated C. difficile strains isolat-

ed in 1991 (n = 100) and in 1997 (n = 98) by the agar macrodilution, the E-test, and the disk diffusion methods. Strain susceptibilities to erythromycin, clindamycin, tetracycline, rifampin, and chloramphenicol were also determined by the ATB ANA gallery (bioMerieux, La Balme-les-Grottes, France). The MICs at which 50% of isolates are inhibited (MIC(50)s) and MIC(90)s of glycopeptides and metronidazole remained stable between 1991 and 1997. All the strains were inhibited by concentrations that did not exceed 2 microgram/ml for vancomycin and 1 &mgr;g/ml for teicoplanin. Comparison of MICs determined by the agar dilution method recommended by the National Committee for Clinical Laboratory Standards and the E test showed correlations (+/-2 dilutions) of 86. 6, 95.9, and 99% for metronidazole, vancomycin, and teicoplanin, respectively. The E test always underestimated the MICs. Strains with decreased susceptibility to metronidazole (MICs, >/=8 microgram/ml) were isolated from six patients (n = 4 in 1991 and n = 2 in 1997). These strains were also detected by the disk diffusion method (zone inhibition diameter, </=21 mm); they belonged to nontoxigenic serogroup D (n = 5) and toxigenic serogroup H (n = 1). Decreased susceptibility to erythromycin (MICs, >/=1 microgram/ml), clindamycin (MICs, >/=2 microgram/ml), tetracycline (MICs, >/=8 microgram/ml), rifampin (MICs, >/=4 microgram/ml), and chloramphenicol (MICs, >/=16 microgram/ml) was observed in 64.2, 80.3, 23.7, 22.7, and 14.6% of strains, respectively. Strains isolated in 1997 were more susceptible than those isolated in 1991, and this trend was correlated to a major change in serogroup distribution. Periodic studies are needed in order to detect changes in serogroups and the emergence of strains with decreased susceptibility to therapeutic drugs.

Barguellil F. et al. *In vivo acquisition of extended-spectrum beta-lactamase in Salmonella enteritidis during antimicrobial therapy.* Eur J Clin Microbiol Infect Dis. 1995; 14(8) : 703-6.p Abstract: The recovery of a Salmonella enteritidis strain that acquired resistance to beta-lactams (including cefotaxime), to aminoglycosides and to chloramphenicol subsequent to cefotaxime therapy is reported. This resistance pattern to beta-lactams was due to the presence of an extended-spectrum beta-lactamase. The isoelectric point of this extended-spectrum beta-lactamase was 6.3. The resistance genes were located on a transferable high-molecular-weight plasmid.

Baril N.B. et al. *Does an infected peripancreatic fluid collection or abscess mandate operation?* Ann Surg. 2000; 231(3) : 361-7.p Abstract: OBJECTIVE: To assess the treatment of peripancreatic fluid collections or abscess with percutaneous catheter drainage (PCD). SUMMARY BACKGROUND DATA: Surgical intervention has been the mainstay of treatment for infected peripancreatic fluid collections and abscesses. Increasingly, PCD has been used, with mixed results reported in the literature. METHODS: A retrospective chart review of 1993 to 1997 was performed on 82 patients at a tertiary care public teaching hospital who had computed tomography-guided aspiration for suspected infected pancreatic fluid collection or abscess. Culture results, need for subsequent surgical intervention, length of stay, and death rate were assessed. RESULTS: One hundred thirty-five aspirations were performed in 82 patients (57 male patients, 25 female patients) with a mean age of 40 years (range 17-68). The etiologies were alcohol (41), gallstones (32), and other (9). The mean number of Ranson's criteria was four (range 0-9). All patients received antibiotics. Forty-eight patients had evidence of pancreatic necrosis on computed tomography scan. Cultures were negative in 40 patients and positive in 42. Twenty-five of the 42 culture-positive patients had PCD as primary therapy, and 6 required subsequent surgery. Eleven patients had primary surgical therapy, and five required subsequent surgery. Six patients were treated with only antibiotics. The death rates were 12% for culture-positive patients and 8% for the entire 82 patients. CONCLUSIONS: Historically, patients with positive peripancreatic aspirate culture have required operation. This series reports an evolving strategy of reliance on catheter drainage. PCD should be considered as the initial therapy for culture-positive patients, with surgical intervention reserved for patients in whom treatment fails.

Barker J. et al. *Intraphagocytic growth induces an antibiotic-resistant phenotype of Legionella pneumophila.* Antimicrob Agents Chemother. 1995; 39(12) : 2684-8.p Abstract: The antimicrobial susceptibilities of Legionella pneumophila isolates grown either in U937 human monocytic cells or in Acanthamoeba polyphaga were studied after release from the host cells without further subculture. Time-survival studies showed that exposure of L. pneumophila cells, gown exclusively in vitro, to 5 micrograms of rifampin per ml resulted in at least 99% killing after 6 h and no detectable survivors at 24 h. Similar rates of killing were observed for in vitro-grown cells tested by exposure to ciprofloxacin. Conversely, time-survival studies revealed that macrophage-grown and amoeba-grown cells were ca. 1,000-fold more resistant to the activities of both drugs. Macrophage-grown cells treated with 5 micrograms of rifampin per ml showed 70 and 62% survival after 6 and 24 h, respectively. Intracellularly grown legionellae were also highly resistant to erythromycin (8 microgram/ml). After 24 h of exposure to the drug, there was 70 and 60% survival for amoeba-grown and macrophage-grown legionellae, respectively, whereas in vitro-grown cells showed a 2-log10 reduction in viable count. when intracellularly grown L. pneumophila cells were subcultured in broth for 48 h, they reverted to the phenotype characteristic of in vitro growth. Morphologically, the cells were larger than their intracellularly grown counterparts and resistance characteristics were lost. The susceptibilities of the subcultured cells to all three drugs were similar to those of Legionella cells grown exclusively in vitro. In view of these findings, the successful treatment of Legionnaires disease may be related as much to the resistance phenotype induced by intramacrophage growth as to the ability of the antibiotic to enter phagocytic cells.

Barragan Casas J.M. et al. *Bacteremia caused by digestive system endoscopy.* Rev Esp Enferm Dig. 1999; 91(2) : 105-16.p Abstract: AIM: to evaluate bacteremias caused during endoscopic examination of the digestive tract. PATIENTS AND METHODS: prospective study of randomly selected patients who underwent digestive system endoscopic examination. Emergency endoscopic examinations were excluded. RESULTS: a total of 102 patients were analyzed. Of 44 patients who underwent gastroscopy, 11 (25%) subsequently had positive blood culture, and Staphylococcus spp and Streptococcus spp were isolated. Of 30 patients who underwent colonoscopy, 3 (10%) had positive blood cultures, and Staphylococcus spp were isolated. Of 28 patients who underwent endoscopic retrograde cholangiopancreatography, 11 (39.2%) had positive blood cultures, and Escherichia coli, Morganella morganii, Staphylococcus spp and Streptococcus spp were isolated. No deaths, endocarditis or other septic phenomena were attributed to bacteremia. CONCLUSIONS: the incidence of bacteremia ranged from 10% to 39% depending on the type of endoscopy. The microorganisms that were isolated most frequently were Staphylococcus spp and Streptococcus spp. Gram-negative bacilli and enterobacteria were isolated in patients who had undergone endoscopic retrograde cholangiopancreatography.

Barriga Angulo G. et al. *Patrones de suceptibilidad in vitro de organismos aislados en pacientes hospitalizados.* Enferm. infecc. microbiol. 1997; 17(3) : 79-82.p Abstract: Se compara la actividad in vitro de cefepime (una nueva cefalosporina parenteral de amplio espectro) contra la de ceftazidima, cefotaxima, piperacilina, ticarcilina-ácido clavulánico, impenem, gentamicina, amikacina yciprofloxina de 4,464 aislamientos bacterianos de diversos géneros grampositivos y gramnegativos, aislados del mismo número de pacintes de uno y otro sexo y de todas las edades, con infecciones bacterianas graves, como: sepsis, neumonías, celulitis, meningitis, etc. Para la identificación y caracterización de los aislamientos se utilizó un equipo automatizado y una técnica de microdilución en caldo para las pruebas de susceptibilidad. La tasa de susceptibilidad total para cefepime, contra

todos los aislamientos, fue de 95.5 por ciento, comparado con imipenem de 92.5 por ciento, cifroploxacina 86.9 por ciento, amikacina 85.8 por ciento, y tan sólo del 68.0 por ciento para ceftriaxona. Cefepime fue muy activo contra en terobactriáces, Pseudomonas aeruginosa, Staphylococcus aureus, Acinetobacter sp. y Haemophilus influenzae, incluyendo a la mayor parte de los patógenos nosocomiales resistentes a las cefalosporinas de tercera generación(AU).

Barros J.C.d.S. et al. *Evidences of gentamicin resistance amplification in Klebsiella pneumoniae isolated from faeces of hospitalized newborns.* Mem. Inst. Oswaldo Cruz. 1999; 94(6) : 795-802.p Abstract: The intestinal microbiota, a barrier to the establishment of pathogenic bacteria, is also an important reservoir of opportunistic pathogens. It plays a key role in the process of resistance-genes dissemination, commonly carried by specialized genetic elements, like plasmids, phages, and conjugative transposons. We obtained from strains of enterobacteria, isolated from faeces of newborns in a university hospital nursery, indication of phenothypical gentamicin resistance amplification (frequencies of 10-3 to 10-5, compatible with transposition frequencies). Southern blotting assays showed strong hybridization signals for both plasmidial and chromossomal regions in DNA extracted from variants selected at high gentamicin concentrations, using as a probe a labeled cloned insert containing aminoglycoside modifying enzyme (AME) gene sequence originated from a plasmid of a Klebsiella pneumoniae strain previously isolated in the same hospital. Further, we found indications of inactivation to other resistance genes in variants selected under similar conditions, as well as, indications of co-amplification of other AME markers (amikacin). Since the intestinal environment is a scenario of selective processes due to the therapeutic and prophylactic use of antimicrobial agents, the processes of amplification of low level antimicrobial resistance (not usually detected or sought by common methods used for antibiotic resistance surveillance) might compromise the effectiveness of antibiotic chemotherapy.

Barroso, D.E. *Aspectos epidemiológicos e biológicos da infecção invasiva por Neisseria meningitidis na cidade do Rio de Janeiro: 1989 a 1995*; São Paulo. s.n. 1998; xiv,138.p Abstract: A doença meningocócica no Rio de Janeiro tem sido um importante problema para a saúde coletiva desde a ocorrência da primeira epidemia em 1921. Em 1988 a incidência da doença alcançou 5/100.000 e desde então essa taxa tem aumentado de forma contínua e em 1995 ultrapassou 10/100.000. O objetivo geral desta tese é descrever a doença meningocócica e as características do agente etiológico envolvido, na cidade do Rio de Janeiro entre 1989 e 1995. Os dados clínicos, epidemiológicos e microbiológicos foram coletados no Instituto Estadual de Infectologia São Sebastião. Entre 1989 e 1992 o estudo foi conduzido retrospectivamente e no período de 1993 a 1995 de maneira prospectiva. Um total de 2106 casos de doença meningocócica foram investigados (89-92: 1141; 93-95: 965). Do total, 61 porcento foram confirmados por critérios bacteriológicos. Os pacientes foram classificados como meningite (30 porcento), meningite com septicemia (59 porcento) e septicemia (11 porcento). Os principais sinais e sintomas foram semelhantes aos relatados na literatura, porém a freq_encia destes por faixa etária mostrou diferenças importantes. A presença de uma evolução clínica pouco característica e sintomas inespecíficos foi mostrada para os lactentes e os idosos. A taxa de letalidade calculada foi de 9 porcento e as apresentações clínicas com púrpura estiveram associadas com um pior prognóstico. O primeiro período estudado correspondeu a uma fase hiperendêmica com predomínio da infecção invasiva por Neisseria meningitidis B. Entre 1993 e 1995 o aumento da incidência ocorreu devido a presença de doença meningocócica pelo sorogrupo C. Entre 1989 e 1992 N. meningitidis C respondeu por 13 porcento dos casos confirmados e entre 1993 e 1995 por 40 porcento (93: 22 porcento; 94: 35 porcento; 95: 57 porcento). Uma epidemia de doença meningocócica foi definida pela identificação de uma estrutura clonal entre as amostras de N. meningitidis C, uma mudança na distribuição dos pacientes por faixa etária, um aumento das formas septicêmicas e um nível de incidência exigindo medidas de controle urgentes. Pela técnica de eletroforese de multilocus enzimático, 78 porcento (119/153) das bactérias do sorogrupo C, sorotipos 2a ou 2b, foram relacionadas a um único clone do ET-40, complexo ET-11. A cepa epidêmica descrita no Rio de Janeiro mostrou diferenças marcantes quando comparada com as cepas descritas em epidemias recentes ocorridas no Brasil...(AU).

Barroso U. et al. *Bladder calculi in children who perform clean intermittent catheterization.* BJU Int. 2000; 85(7) : 879-84.p Abstract: OBJECTIVE: To examine the role of clean intermittent catheterization (CIC) as a possible predisposing risk factor for bladder calculi, assessing risk factors in patients with and without bladder augmentation, and to evaluate management options for bladder calculi in these patients. PATIENTS AND METHODS: The records of 403 patients who were using a regimen of CIC between January 1981 and March 1998 were reviewed to identify those forming bladder calculi; stones were diagnosed in 28 patients. The patients were categorized as: group 1, patients with no bladder augmentation who catheterized urethrally (227, group 1a) or via a Mitrofanoff conduit (18, group 1b); group 2, patients with augmented bladders who catheterized urethrally (100, group 2a) or via a Mitrofanoff conduit (58, group 2b). The incidence of bladder calculi in each group was determined and compared statistically where applicable. The success of the treatment options for stone management was reviewed. RESULTS: Bladder calculi developed in 5% of patients in group 1a, 8% in group 2a, 11% in group 1b, and 10% in group 2b; the incidence of calculi was not significantly different among the groups. Of these patients, 18 (64%) were asymptomatic at the time of diagnosis and significant bacteriuria was found in 23 (88%). Difficulty in catheterizing either the Mitrofanoff conduit or the native urethra was reported in 14 (50%) of these patients. Calculi were more often solitary (71%) and typically composed of struvite or apatite. Calculi were managed by open cystolithotomy in 15 patients (54%) and endoscopically in 13 (46%). Stones recurred in nine patients (32%) after treatment, comprising four of six patients treated endoscopically with electrohydraulic lithotripsy and in five of 15 after open cystolithotomy. The mean interval to recurrence was 22.8 months. CONCLUSION: These results suggest that patients on a regimen of CIC are at risk of developing bladder calculi but the incidence of calculi is not influenced by bladder augmentation. The presence of a Mitrofanoff conduit was associated with a slightly increased incidence of calculus formation. Open cystolithotomy was associated with a lower stone recurrence rate but there were too few patients to draw definitive conclusions.

Barry A.L. *Antimicrobial resistance among clinical isolates of Streptococcus pneumoniae in North America.* Am J Med. 1999; 107(1A) : 28S-33S.p Abstract: From a historical perspective, the development of antibiotic resistance among Streptococcus pneumoniae isolates can be traced over the past 3 decades. In North America, penicillin-resistant pneumococci are now found in nearly all medical centers, but the prevalence of such strains varies by region and time period. In the United States, only approximately 75% of all pneumococci are fully susceptible to penicillin, 15% are intermediately susceptible, and approximately 10% are highly resistant. The latter are often multiply resistant to other unrelated drugs, which leaves few effective chemotherapeutic agents with which to treat serious infections caused by such strains. New approaches to therapy are needed to avoid further selection of antibiotic-resistant mutants; these include discontinuing inappropriate or unnecessary use of antibiotics.

Barry A.L. et al. *Antipneumococcal activities of a ketolide (HMR 3647), a streptogramin (quinupristin-dalfopristin), a macrolide (erythromycin), and a lincosamide (clindamycin).* Antimicrob Agents Chemother. 1998; 42(4) : 945-6.p Abstract: Four different compounds belonging to the macrolide-lincosamide-streptogramin B (MLSb) class of antimicrobial agents were tested against 611 Streptococcus pneumoniae

strains. The ketolide (HMR 3647, previously RU66647) and the streptogramin (quinupristin-dalfopristin) were both active against pneumococci with high-level MLSb resistance (clindamycin-resistant strains) as well as those with low-level macrolide resistance (clindamycin-susceptible strains).

Barsic B. et al. *Antibiotic resistance among gram-negative nosocomial pathogens in the intensive care unit: results of 6-year body-site monitoring.* Clin Ther. 1997; 19(4) : 691-700.p Abstract: Results of 6-year body-site monitoring in an intensive care unit (ICU) are presented and antimicrobial resistance of gram-negative isolates analyzed. The study included 622 patients. Six hundred thirty-five bacterial isolates-causes of nosocomial sepsis, pneumonia, and urinary tract infections (UTIs)-were tested during the study. Gram-negative bacteria were the predominant isolates, causing 65% of cases of sepsis, 78.7% of pneumonias, and 70.2% of UTIs. Gram-negative isolates (454) were highly resistant to antimicrobials commonly used in the ICU, with the exception of imipenem. Resistance was 1.1% among pathogens responsible for UTIs, 6.7% among those causing sepsis, and 13.6% among those responsible for pneumonia. Klebsiella pneumoniae associated with pneumonia and sepsis was significantly less resistant to ciprofloxacin than were isolates from urine (22.8% and 13.9%, respectively, vs 44.4%). Pseudomonas aeruginosa strains responsible for pneumonia were less resistant to ceftazidime than were isolates causing sepsis and UTI (35.7% vs 51.3% and 51.5%, respectively). Acinetobacter calcoaceticus strains associated with UTI were significantly more resistant to netilmicin than were strains responsible for sepsis and pneumonia (83.3% vs 40.3% and 42.6%, respectively). The study confirmed that in addition to focused microbiologic surveillance, multiple-body-site monitoring can provide unique information about the sensitivity of the pathogens involved. The results suggest that antimicrobial resistance among nosocomial pathogens depends on the site of infection or the type of microbiologic specimen.

Bart-Delabesse E. et al. *Usefulness of genotyping with microsatellite markers to investigate hospital-acquired invasive aspergillosis.* J Hosp Infect. 1999; 42(4) : 321-7.p Abstract: To assess whether invasive aspergillosis (IA) was hospital acquired, Aspergillus fumigatus isolates, obtained during a one-year study from inpatients with haematological diseases and IA and from their environment, were genotyped using microsatellite markers. The analysis of 62 environmental isolates showed an extremely diverse A. fumigatus population with 43 genotypes represented only once. Eight genotypes were found more than twice at different times and/or at different locations showing that a given isolate can persist over time and is not dependent on a specific location. Twenty-seven isolates were obtained from 12 patients with IA. Of eight patients with multiple isolates, four were infected with isolates of different genotypes. Five patients (42%) had hospital-acquired IA according to the following definitions: patients infected with an isolate found in the environment, or patients infected with the same genotype. Although genotyping results are highly suggestive of hospital-acquired IA, this cannot be proved definitively because of the high diversity of the A. fumigatus population and the limited environmental sampling. A better knowledge of the A. fumigatus population outside hospitals is needed. For this purpose, genotyping using microsatellite markers seems appropriate.

Bartoloni A. et al. *Patterns of antimicrobial use and antimicrobial resistance among healthy children in Bolivia.* Trop Med Int Health. 1998; 3(2) : 116-23.p Abstract: OBJECTIVE: To determine the incidence of antimicrobial-resistant, nonpathogenic Escherichia coli among healthy children aged 6-72 months in Camiri town and a rural village, Javillo, in south-eastern Bolivia. METHOD: A community-based survey: stool samples were obtained from 296 healthy children selected by modified cluster sampling in Camiri and all 25 eligible children in Javillo. E. coli isolates were tested for antimicrobial susceptibility according to the standard disc diffusion method. By a questionnaire survey of 12 pharmacies and by using simulated patients, we investigated the antimicrobial availability and the usage patterns in Camiri town. RESULTS: In Camiri, over 90%, and in Javillo over 70% of children carried E. coli resistant to ampicillin, trimethoprim-sulphamethoxazole (TMP/SMX) or tetracycline. Overall, 63% of children carried E. coli with multiple resistance to ampicillin, TMP/SMX, tetracycline and chloramphenicol. In the simulated patients study, antimicrobials were dispensed inappropriately for 92% of adults and 40% of children with watery diarrhoea, and were under-prescribed for males with urethral discharge (67%) or females with fever and dysuria (58%). The dose and/or duration of antimicrobials dispensed was almost always too low. CONCLUSION: Our study showed a disturbingly high prevalence of carriage of nonpathogenic E. coli resistant to antimicrobials. The prevalence of resistance to ampicillin and TMP/SMX was higher than that previously reported in developing countries. The existence of a large reservoir of resistance genes in healthy individuals in developing countries represents a threat to the success of antimicrobial therapy throughout the world. Programmes to improve rational and effective drug use in developing countries are urgently needed.

Bartu V. *[Pulmonary and extrapulmonary mycobacteriosis].* Epidemiol Mikrobiol Imunol. 1998; 47(1) : 20-2.p Abstract: Pulmonary and extrapulmonary mycobacterioses are diseases with a less frequent incidence. They affect in particular subjects in an immunodeficient state and with chronic pulmonary disease. The diagnosis is based on the clinical picture, pathological X-ray picture and repeated positivity of the examined biological material with subsequent identification of the mycobacterial strain. These microorganisms are found in nature, infection occurs most frequently by inhalation and interpersonal transmission was never proved so far. Extrapulmonary manifestations are associated with lymphadenitis, affections of the skin and soft tissues. In therapy which extends over several months a combination of antituberculotics and antibiotics is used which are effective against the particular mycobacterium. In indicated cases a surgical approach should be used. The author presents a list of mycobacteria types of diseases they produce, as well as an account on the diagnostic and therapeutic approach.

Bashmakova M.A. et al. *[Infection and bacterial colonization of urogenital system in pregnancy, its effect on the clinical course of pregnancy, fetus and newborn].* Akush Ginekol (Mosk). 1995; (1) : 15-8.p Abstract: Colonization/infection of the genitals with Mycoplasma, group B Streptococci, and Chlamydia was studied in pregnant women. The course of gestation in women colonized with microorganisms was frequently aggravated by threatened spontaneous abortions, high incidence of hydramnion, late gestoses, pyelonephritis. For the newborns a reduced body mass and increased perinatal morbidity and mortality were characteristic. Transfer of microorganisms to the fetus and newborn was observed in 40-50% of cases and was not always associated with development of a disease. In cases of lethal outcomes of a neonatal disease pneumonia and placentitis were the constant morphological manifestations of the infection. In streptococcal and mycoplasmic infection the inflammation in the placenta was diffuse, involving the decium both in the placenta and in the extraplacental membranes.

Bastani B. et al. *Insufficient penetration of systemic vancomycin into the PermCath lumen.* Nephrol Dial Transplant. 2000; 15(7) : 1035-7.p Abstract: BACKGROUND: Catheter infection is a major cause of morbidity and catheter loss in chronic haemodialysis patients. There has been a large discrepancy in the catheter salvage rate, after an episode of documented bacteraemia, whether the patients receive systemic antibiotic alone or systemic antibiotics concomitant with 'antibiotic-lock technique' (20-30% vs 100%, respectively). To test the hypothesis that vancomycin may not adequately penetrate into the lumen of the catheter, despite therapeutic plasma levels, a series of in-vivo, ex-vivo, and in-vitro experiments were performed. METHODS: We compared serum and intralumenal (0.3-0.5 ml aspirate from venous port of the catheter) vancomycin concentra-

tions in 24 chronic haemodialysis patients, with documented bacteraemia, who had received prior systemic vancomycin therapy with 14 similar patients who had additionally received 'vancomycin-lock technique' (100 microg/ml of vancomycin in heparin solution) after each haemodialysis session. RESULTS: Despite serum vancomycin concentration of approximately 17 microg/ml in each group, the vancomycin concentration in the venous hub of the catheter was only 0.2+/-0.6 microg/ml in the former group, in sharp contrast to 125. 6+/-13 microg/ml in the latter group. In the ex-vivo experiment, four uninfected PermCaths which had been removed were immediately fixed and studied with scanning electron microscopy. No cellular or fibrin barrier could be found at the terminal pore of the catheter interfering with the diffusion of vancomycin from plasma into the catheter lumen. In the in-vitro experiments, three PermCaths filled with standard heparin solution were incubated for 48 h in 100 ml of plasma containing 20 microg/ml of vancomycin. Vancomycin concentration was measured in 0.3-0.5 ml solution aspirated from each port of the catheters. Vancomycin concentration was 0.2+/-0.1 microg/ml in the aspirated samples. Finally, two PermCaths filled with the standard heparin solution were incubated for 48 h in 100 ml of plasma containing 20 microg/ml of vancomycin, after which the catheters were sectioned at 4-cm intervals. Only the distal 4 cm of the catheters had vancomycin concentrations of 2 and 5 microg/ml, the remaining segments had levels </=0.5 microg/ml. CONCLUSION.: Our results indicate that diffusion of vancomycin from plasma into the haemodialysis catheter is negligible. Thus, haemodialysis patients with central venous catheter who have to be treated for bacteraemia with systemic antibiotic therapy must always receive 'antibiotic-lock technique' of the catheter after each haemodialysis session.

Battistini A. et al. *[The tonsils and adenoids as a site of infection and the cause of obstruction].* Pediatr Med Chir. 1998; 20(4) : 237-47.p Abstract: The failure to eradicate group A beta-hemolytic streptococci from the pharynx is partly due to a low compliance, but above all, an alteration of the oropharyngeal microbiological flora: reduction of alpha-haemolytic streptococci which inhibit group A beta-hemolytic streptococci and increase of microorganisms such as Streptococcus pneumoniae, Haemophilus influenzae, Moraxella catarrhalis. These latter act indirectly destroying the beta-lactamic ring of penicillins. However, this obstacle is overcome by the use of antibiotics which do not contain beta-lactamic rings such as macrolides or associating amoxicillin with clavulanic acid or with new cephalosporins which are more resistant to beta lactamases. To restrict the diffusion of resistance to antibiotics, it is essential to limit their use diagnosing streptococcal tonsillopharyngitis more precisely, thanks to an improved use of micro-biological diagnostic tests and by a more extended use of tonsillectomy in recurrent tonsillitis (more than 6-7 in 1-2 years). Adenoiditis is closely related to the post nasal drip syndrome, to recurrent otitis media and to otitis media with effusion. All these situations could, therefore, represent an indication, although not well defined, for adenoidectomy. Nasopharyngeal obstruction due to adeno-tonsillar hypertrophy becomes critical during sleep when the hypotony of the upper airway muscles becomes additional to the anatomical obstruction. At this point the inspiratory effort required and the consequent decrease of intra airway pressure increase the pharyngeal obstruction suctioning the pharyngeal walls toward the median line. The resulting clinical picture is defined as sleep-disordered breathing (SDB) due to adenotonsillar hypertrophy (idiopathic), to be distinguished from SDB due to cranio-facial abnormalities or neuromuscular diseases. SDB includes both the more serious sleep apnea syndrome and the less severe upper airway respiratory resistance syndrome. A combination of symptoms and clinical data detectable both while awake or asleep, make the diagnosis simple. During sleep, both apnea and paradoxical inspiratory movements are highly specific while snoring is highly sensitive. To evaluate nasopharyngeal obstruction radiography and optic fibre endoscopy are both equally reliable. The gold standard test for non idiopathic SDB is the polysomnography, whereas for SDB, due to adenotonsillar hypertrophy, one is limited today to the recording during sleep of O2 saturation or of end tidal CO2. These investigations are, however, generally used up to 2 years of age, when the decision to carry out an adenoidectomy and especially a tonsillectomy is more difficult because of the greater risks which surgery involves at this age. The pharmacological therapy has a purely palliative function and is based on antibiotics, local vasoconstrictors, steroids and theophylline which acts more as an antiflogistic than as a breath stimulant. O2 therapy and nasal continuous positive airway pressure (CPAP) give better results, but are more difficult to carry out, in particular on a long term basis. Adenoidectomy especially if associated with tonsillectomy, leads to the resolution of the symptoms, but not always to a normalization of functional alterations (hypoxia and hypercapnia). For this reason, it is necessary to act on other factors which cause oedema of the nasopharyngeal mucosa contributing to the obstruction. In this area, the prevention of viral infections can be achieved by vaccination against influenza and by preventing the child from attending crowded day care centers. With regard to allergic inflammation, skin prick tests could be a first step in view of allergens avoidance measures. With regard to indoor air pollution, passive smoke must be stopped and the child kept out of the kitchen.

Baudo F. et al. *The continuous infusion of recombinant activated factor VIIa (rFVIIa) in patients with factor VIII inhibitors activates the coagulation and fibrinolytic systems without clinical complications.* Thromb Res. 2000; 99(1) : 21-4.p Abstract: The standard modality of administration of rFVIIa to patients with FVIII and FIX inhibitors is the intermittent infusion every 2 to 6 hours. No untoward local or systemic effects have been reported; laboratory data of activation of coagulation were reported in the presence of coexistent problems (sepsis, septic shock) or with high doses. We treated four patients with FVIII inhibitor with rFVIIa administered by continuous infusion by a central vein catheter, monitoring the signs of systemic activation of the hemostatic system. The F(1+2) prothrombin fragments and the D-dimer increased after the bolus, and remained above the baseline values throughout the treatment period. These variations observed during the infusion period were not accompanied by clinical events.

Baughman R.P. et al. *The diagnosis and treatment challenges in nosocomial pneumonia.* Diagn Microbiol Infect Dis. 1999; 33(2) : 131-9.p Abstract: Pneumonia is the second most common type of nosocomial infection and is most prevalent in patients who are mechanically ventilated. Nosocomial pneumonia (NP) is the leading contributor to mortality in patients, accounting for approximately 50% of deaths in patients with hospital-acquired infections. Several factors place patients at risk for developing NP, including prolonged length of hospital stay and local epidemiology. Gram-positive pathogens such as Streptococcus pneumoniae and, more recently, Staphylococcus aureus, as well as atypical organisms such as Legionella spp are increasingly associated with NP. Emerging antimicrobial resistance among these organisms confounds treatment interventions. Lack of local definitive information and patient comorbidities further complicate the physician's treatment decisions. The role of invasive pulmonary diagnostic techniques remains problematic and controversial. Studies, however, have shown that early initiation of appropriate empiric therapy is essential to improving patient outcome and reducing mortality. This article will review therapeutic options and appropriate antimicrobial agents for use in the treatment of nosocomial pneumonia in the era of emerging drug resistances.

Baysan A. et al. *Use of microwave energy to disinfect a long-term soft lining material contaminated with Candida albicans or Staphylococcus aureus.* J Prosthet Dent. 1998; 79(4) : 454-8.p Abstract: STATEMENT OF PROBLEM: Soft lining materials have been found to be more susceptible to microbial adhesion than acrylic resin base materials. Denture hygiene is essential to maintain the serviceability of the denture, and microwave energy has been suggested for denture dis-

infection. PURPOSE: The purpose of this study was to determine the effectiveness of microwave energy in the disinfection of a long-term soft lining material. MATERIAL AND METHODS: A long-term soft lining material was contaminated with known microorganisms and the reduction of organism counts after test disinfection regimes calculated. The disinfection regimes were microwaving for 5 minutes, leaving dry overnight, and soaking overnight in a dilute sodium hypochlorite solution. The test microorganisms were Candida albicans or Staphylococcus aureus. RESULTS: For both organisms, soaking in sodium hypochlorite reduced the number of viable adherent microorganisms recovered significantly more than exposure to microwave energy, which led to greater reduction than leaving the lining material dry overnight ($p < 0.001$, Wilcoxon non-parametric signed rank test). CONCLUSION: With reference to the tested microorganisms, disinfection of Molloplast-b soft lining material in dilute sodium hypochlorite solution proved to be more effective than exposure to microwave energy, which in turn was more effective than leaving the lining dry overnight.

Bazzoli F. *Italian omeprazole triple therapy—a 1-week regimen.* Scand J Gastroenterol Suppl. 1996; 215 : 118.p Abstract: Eradication of Helicobacter pylori infection is increasingly recognized as an appropriate therapeutic option, although it may prove difficult to achieve. Variable results, possibly due to side-effects, poor patient compliance and antimicrobial resistance, have been reported with traditional bismuth triple therapy. The combination of highly effective antisecretory drugs, such as omeprazole, and antimicrobial agents are providing a useful alternative to such traditional triple therapy.

Beaujean D.J. et al. *Surveillance of nosocomial infections in geriatric patients.* J Hosp Infect. 1997; 36(4) : 275-84.p Abstract: Prospective surveillance of hospital-acquired infections was undertaken in the geriatric ward of the University Hospital, Utrecht, the Netherlands. The medical records of 300 patients were studied for the presence of nosocomial infections using the criteria defined by the Centers for Disease Control (CDC), Atlanta, Georgia, USA. Data were collected from patients with and without infection, which allowed for the analysis of risk factors for nosocomial infection. In 100 out of 300 patients (33.3%), a total of 126 infections was diagnosed. The incidence of nosocomial infections was 16.9 per 1000 days of stay in the hospital. The mean length of stay of patients with infection was 39 days, while that of patients without infection was 17.8 days. Infections developed after an average stay of 13.3 days in the hospital. Patients with infections were 2.6 years older than patients without infections ($P = 0.005$). Dehydration was shown to be a major risk factor for infection (RR = 2.1, 95% CI: 1.4-3.2). Of the infections, 58.7% were urinary tract infections (UTIs, asymptomatic and symptomatic). The most important risk factor for an asymptomatic UTI was an indwelling urinary catheter (RR = 7.3, 95% CI: 3.1-17.1). The duration of use of the indwelling urinary catheter was of significant influence in the development of a UTI. Seventy percent of the patients with an asymptomatic UTI were treated with antibiotics. Infections of the gastrointestinal tract accounted for 19.8% of all nosocomial infections. The majority of these infections were due to an outbreak of Clostridium difficile. In conclusion, the length of stay may be prolonged by a nosocomial infection. In this study, the main risk factors for developing a nosocomial infection were age, dehydration and the presence of an urinary catheter. Our observations showed that age is a predisposing factor for nosocomial infection and that the risk increases with each year, even for geriatric patients.

Beaulac C. et al. *In-vitro bactericidal efficacy of sub-MIC concentrations of liposome-encapsulated antibiotic against gram-negative and gram-positive bacteria.* J Antimicrob Chemother. 1998; 41(1) : 35-41.p Abstract: It has been shown previously that tobramycin encapsulated in fluid liposomes (composed of dipalmitoylphosphatidylcholine (DPPC) and dimyristoylphosphatidylglycerol (DMPG)) eradicated mucoid Pseudomonas aeruginosa in an animal model of chronic pulmonary infection. Exponential cultures of P. aeruginosa, Stenotrophomonas maltophila, Burkholderia cepacia, Escherichia coli and Staphylococcus aureus were treated with (i) free tobramycin, (ii) sub-MIC tobramycin encapsulated in DPPC/DMPG liposomes, (iii) control liposomes without antibiotic or (iv) control liposomes combined with free tobramycin. Bacterial colonies were counted 0, 1, 3, 6 and 16 h after addition of antibiotic. After 3 h, the growth of B. cepacia, E. coli and S. aureus was reduced 129, 84 and 566 times respectively in cultures treated with encapsulated antibiotic compared with those treated with free antibiotic. Six hours and 16 h after treatment, the maximal reduction of growth between strains treated with liposome-encapsulated tobramycin and free tobramycin was 84, 129, 166, 10(5) and 10(4) times respectively for P. aeruginosa, B. cepacia, E. coli, S. maltophilia and S. aureus. The liposomes were stable at 4 degrees C and at room temperature for the whole period studied. At 37 degrees C, equivalent stability was observed for the first 16 h of the study. Administration of antibiotic encapsulated in DPPC/DMPG liposomes may thus greatly improve the management of resistant infections caused by a large range of microorganisms. The strong bactericidal activity of the encapsulated antibiotic at sub-MIC doses of the strains tested cannot be explained only as a result of prolonged residence time of liposome-encapsulated tobramycin and the resulting release of entrapped antibiotic at the bacterial site; rather, direct interaction of chemoliposomes and bacteria, probably by a fusion process, may explain the bactericidal effect of the sub-MIC antibiotic doses used.

Bebear C. et al. *New developments in diagnostic and treatment of mycoplasma infections in humans.* Wien Klin Wochenschr. 1997; 109(14-15) : 594-9.p Abstract: Several methods can be used for the diagnosis of mycoplasmal human infections. Culture is not satisfactory for fastidious species, while serological procedures allow only a retrospective diagnosis. Recently, rapid methods have become available. Antigenic detection proposed for Mycoplasma pneumoniae lacks sensitivity. Hybridization based techniques include DNA probes and mainly DNA amplification. The main usefulness of the polymerase chain reaction (PCR) is the detection of fastidious organisms such as M. pneumoniae, M. genitalium, M. fermentans, M. penetrans, but PCR can also be used for characterization of the strains for epidemiological purposes, or for detection of antimicrobial resistance genes. The major advantage of PCR for detection is its very high sensitivity. However, until now, the major drawback of this technique has been the lack of commercial kits. When available, they should provide better standardization of the technique and, if available at a reasonable cost, become the major technique for the diagnosis of mycoplasma infections. The antibiotics used for the treatment of mycoplasmal infections belong to tetracyclines, macrolides-lincosamides and fluoroquinolones. These products are highly active in vitro against mycoplasmas. However, some of them have a differential activity according to the species, and acquired resistance has been reported, mainly in genital mycoplasmas. Most of mycoplasmal infections are cured by adapted antibiotics, but they may be difficult to cure in immunosuppressed patients.

Beck-Sague C. et al. *Outbreak investigations.* Infect Control Hosp Epidemiol. 1997; 18(2) : 138-45.p Abstract: Epidemic nosocomial infections are defined as hospital-acquired infections that represent an increase in incidence over expected rates. Epidemic-associated infections usually are clustered temporally or geographically, suggesting that the infections are from a common source or are secondary to increased person-to-person transmission. Epidemics are important, because they account for a substantial percentage of nosocomial infections. Furthermore, if infection control personnel thoroughly investigate outbreaks of nosocomial infections, they may identify new agents, reservoirs, or modes of transmission.

Bedenic B. *[Development of beta-lactam antibiotic resistance in gram-negative bacteria and the impact of resistance on therapy].* Lijec Vjesn. 1999; 121(7-8) : 249-57.p Abstract: Bacterial resistance to antibiotic is

the inevitable consequence of the utilization of antimicrobial agents all over the world, particularly in developed countries. It is particularly evident with beta-lactam agents because they are among most frequently prescribed drugs. The resistance is mainly attributable to production of various types of beta-lactamases but other mechanisms like alterations in PBP molecules or in outer membrane proteins can play a significant role. Increased resistance can be seen among fastidious gram-negative bacteria like Haemophilus influenzae or Moraxella catarrhalis. The percentage of M. catarrhalis isolates producing beta-lactamases has increased to over 90%. Among Enterobacteriaceae E. coli and Klebsiella pneumoniae pose a very serious problem because of the production of extended-spectrum beta-lactamases which confer resistance to third generation cephalosporins. The percentage of ampicillin resistant E. coli among hospital isolates has rosen to 78% in U.S.A. nowadays. Recently, the emergence of E. coli strain resistant to combination of amoxycillin and clavulanate, due to hyperproduction of TEM-1 beta-lactamase, was observed. Inducible beta-lactamases mediate beta-lactam resistance in Pseudomonas aeruginosa which often develops during therapy of P. aeruginosa infections. Imipenem resistance is increasingly prevalent among P. aeruginosa isolates nowadays, but can be detected in K. pneumoniae due to the production of novel beta-lactamases and changes in outer membrane proteins.

Bedos J.P. et al. *Epidemiological features of and risk factors for infection by Streptococcus pneumoniae strains with diminished susceptibility to penicillin: findings of a French survey.* Clin Infect Dis. 1996; 22(1) : 63-72.p Abstract: A nationwide retrospective study was performed in France to describe the susceptibility of Streptococcus pneumoniae strains to penicillin G and to identify risk factors for infection with nonsusceptible strains. From January 1991 to May 1992, 10,350 S. pneumoniae strains were recorded. The overall rate of penicillin-nonsusceptible pneumococcal (PNSP) strains was 11%; specific prevalence rates, according to the sources of the isolates, were as follows: blood, 6%; cerebrospinal fluid, 10%; lower respiratory tract, 10%; and middle ear, 18%. Large variations in regional distribution were observed. In 85% of cases, PNSP strains belonged to serogroup 23, 19, 6, 14, or 9, by order of decreasing frequency. A logistic regression model identified the following factors as being associated with PNSP infections: age of < 15 years (OR = 2.01), isolation of the organisms from the upper respiratory tract (OR = 2.36) or from sinus and middle ear (OR = 1.63), HIV infection (OR = 2.01), beta-lactam antimicrobial therapy in the previous 6 months (OR = 1.99), and nosocomial acquisition (OR = 2.12). The attributable risk of beta-lactam antimicrobial therapy in the previous 6 months was 19%, showing that suppression of this factor alone could not eradicate PNSP infections.

Beebe J.L. et al. *Recovery of uncommon bacteria from blood: association with neoplastic disease.* Clin Microbiol Rev. 1995; 8(3) : 336-56.p Abstract: Table 6 is a summary of the organisms discussed with a listing of the environmental source, the endogenous source, the predisposing factors including neoplasms, and the postulated mechanisms by which the organism can gain access to the circulation. The evidence considered indicates that the entrance of one of these microorganisms into the bloodstream of a human being depends on the presence of multiplicity of predisposing factors. In the majority of cases of bacteremia due to one of these unusual organisms, two or more predisposing factors are present. Certain predisposing factors, such as cancer chemotherapy or intravenous catheterization, often provide a barrier break, while others, such as liver disease, may render the host immune system less capable of clearing organisms from the circulation. For organisms such as Campy-lobacter, Listeria, and Salmonella spp., attributes that allow the invasion of a healthy host are present and seem to be enhanced by the simultaneous presence of a predisposing condition, such as liver disease, in the host. Although somewhat fragmentary, a number of individual case reports describe bacteremia due to one of these organisms occurring weeks to years after surgery and after other therapeutic measures had effected a supposed cure of a cancer. It may be speculated that cancer patients, even after a cure, are still susceptible to bloodstream invasion by one of the aforementioned organisms by virtue of the presence of one or more predisposing metabolic, physiologic, or immunologic factors, even though these factors may be cryptic. The predominance of hematologic malignancies among cases of bacteremia due to these unusual organisms is also apparent. Although, as pointed out by Keusch (169), the reduction in the performance of immune function in hematologic malignancies compared with solid tumors is likely to be responsible, other associations of certain organisms with specific neoplasms warrant further examination. The frequency of bloodstream infections of Salmonella typhimurium and Capno-cytophaga canimorsus in Hodgkin's disease patients seems likely due to a particular mechanism which infection by these species is favored. The specific nature of these mechanisms remains to be determined. The recovery of any unusual bacterium from blood should warrant a careful consideration of the possibility of underlying disease, especially cancer. Microbiologists should advise clinicians of the unusual nature of the identified organism and provide the counsel that certain neoplastic processes, often accompanied by neutropenia, render the human host susceptible to invasion by almost any bacterium.(ABSTRACT TRUNCATED AT 400 WORDS).

Beezhold D.W. et al. *Skin colonization with vancomycin-resistant enterococci among hospitalized patients with bacteremia.* Clin Infect Dis. 1997; 24(4) : 704-6.p Abstract: To assess the prevalence of skin and rectal colonization by vancomycin-resistant enterococci (VRE) in hospitalized bacteremic patients and to determine the relation between colonization and bacteremia, we compared 14 case patients who had bacteremia due to VRE with 30 control patients who had bacteremia due to other pathogens. Rectal colonization and skin (inguinal area and/or antecubital fossa) colonization with VRE were common among both case patients (100% had rectal colonization, and 86% had skin colonization) and control patients (37% had rectal colonization and 23% had skin colonization). Among patients with rectal colonization, skin colonization was more common when diarrhea or fecal incontinence was present. The bloodstream cleared without appropriate antimicrobial therapy in nine of the 14 patients with bacteremia due to VRE. The high prevalence of skin colonization with VRE may increase the risk of catheter-related sepsis, cross-infection, or blood culture contamination (which may explain the frequent spontaneous resolution of bacteremia due to VRE).

Bell J.M. et al. *Emergence of vancomycin-resistant enterococci in Australia: phenotypic and genotypic characteristics of isolates.* J Clin Microbiol. 1998; 36(8) : 2187-90.p Abstract: Enterococci with resistance to glycopeptides have recently emerged in Australia. We developed multiplex PCR assays for vanA, vanB, vanC1, and vanC2 or vanC3 in order to examine the genetic basis for vancomycin resistance in Australian isolates of vancomycin-resistant Enterococcus faecium and E. faecalis (VRE). The predominant genotype from human clinical E. faecium isolates was vanB. The PCR van genotype was consistent with the resistance phenotype in all but six cases. One vanA E. faecalis isolate had a VanB phenotype, one vanB E. faecium isolate had a VanA phenotype, and four E. faecalis isolates were consistently negative for vanA, vanB, vanC1, and vanC2 or vanC3, even though they exhibited a VanB phenotype. These four isolates were subsequently examined for the presence of vanD by published methods and were found to be negative. No vancomycin-susceptible strains produced a PCR product. On the basis of our findings the epidemiology of VRE in Australia appears to be different from that in either the United States or Europe. Our multiplex PCR assays gave a rapid and accurate method for determining the genotype and confirming the identification of glycopeptide-resistant enterococci. Rapid and accurate methods are essential, because laboratory-based surveillance is critical in programs for the detection, control, and prevention of the transmission of glycopeptide-resistant enterococci.

Beloborodova N.V. *[Glycopeptides (vancomycin, teicoplanin)—their place in the antibacterial therapy of patients in a high-risk group].* Anesteziol Reanimatol. 1998; (4) : 23-7.p Abstract: Today, when the number of high-risk patients is increasing, special attention should be paid to polyresistant gram-positive microorganisms staphylococci and enterococci, whose role in infective complications and septic states is increasing. The author analyzes published reports on the rate of isolation of methicillin-resistant staphylococci (MRS) and enterococci in different countries and relationship of this parameter with antibiotic policy. Special attention is paid to unjustified wide use of third-generation cephalosporines and their role in selection of polyresistant bacteria. The rate of MRS isolation vs. all other staphylococci at intensive care wards for newborns is as high as 63.9%. The incidence of coagulase-negative staphylococci (most often S. epidermidis) in clinical material (blood, cerebrospinal fluid, urine) from high-risk patients increased 2-3 times during two recent years. Glycopeptides vancomycin and teicoplanine are drugs of choice for the treatment of infections caused by such microorganisms (sepsis, endocarditis, osteomyelitis, pneumonia, etc.). These drugs should be listed among obligatory antibiotics for resuscitation and intensive care wards as life-saving drugs.

Beloborodova N.V. et al. *[Characteristics of fauces microflora in children treated in intensive care units].* Antibiot Khimioter. 1998; 43(8) : 16-22.p Abstract: Characteristic features of fauces aerobic microflora in children treated in intensive care units (ICU) were analysed. For comparison fauces microflora in children outpatients and in children patients from general surgical units was investigated. A retrospective analysis of all the smears without exception for 2 years (a total of 2120) revealed a direct dependence of the changes in the fauces microflora composition on the patient condition and the antibiotic load. It was shown that the fauces indigenic microflora in ICU patients was more often replaced by enterococci, gramnegative enteric bacteria and nonfermenting bacteria which are not usual under the normal conditions. The flora in such cases was represented by monoculture. Thus, microorganisms natural for the fauces i.e. Haemophilus influenzae and Neisseria spp. were not practically detected in the fauces of the ICU patients (0.5 and 0.4 per cent, respectively). Grampositive cocci in the children of the surgical units and in the outpatients included alpha-hemolytic streptococci in association with beta-hemolytic or nonhemolytic streptococci. No such bacteria were isolated from the ICU newborns. The associations of gramnegative organisms from the ICU patients included 40 variants. Seventy-eight association variants of Pseudomonas aeruginosa were mainly represented by the combinations with Serratia spp. and Klebsiella spp. as well as with coagulase negative staphylococci or enterococci, especially in the ICU newborns. The results of the study demonstrated that the target-aimed antibiotic therapy providing eradication of P.aeruginosa in the ICU patients was not always justified because of possible superinfection practically due to any organism from the association. Massive antibiotic therapy with pressing on gramnegative flora in the ICU patients induced selective contamination of the mucosa by polyresistant enterococci thus increasing their potential role in the development of hospital infections.

Belzunegui J. et al. *Vertebral osteomyelitis in northern Spain. Report of 62 cases.* Clin Exp Rheumatol. 1999; 17(4) : 447-52.p Abstract: OBJECTIVE: The records of 62 patients with clinical and radiographic evidence of vertebral osteomyelitis and positive bacteriological diagnosis, seen between 1979 and 1996, were reviewed in order to gather data on the epidemiology and the clinical pattern displayed by patients with this condition in northern Spain. RESULTS: Staphylococcus aureus (15 cases), Mycobacterium tuberculosis (15 cases) and Brucella melitensis (13 cases) were the microorganisms most frequently found in our patient series. After improvement of the sanitary and hygienic control of food products, the role of Brucella melitensis is decreasing as a causative agent (only 3 cases in the last 6 years). Staphylococcus epidermidis, present in 4 cases (6.6%), should be suspected in elderly patients with previous intravenous cannulations (3 of 4 cases). The most frequent risk factors were alcoholism (7 cases), chronic hepatic disease (7 cases), diabetes (6 cases) and previous surgery (6 cases). Delay in diagnosis was high (the mean number of days between the onset of symptoms and diagnosis was 125). The lumbar region was the most commonly affected site. Neurologic involvement was present in 10 patients on admission (16%). ESR was > 50 mm/hr in a high number of cases. Blood cultures were found to be the most valuable routine test. Plain x-rays were normal in 10 patients (16%); in 6 of them Staphylococcus aureus was the responsible organism. Other imaging modalities showed a high sensitivity. Surgical drainage was necessary in 12 individuals (in 7 due to Mycobacterium tuberculosis). Outcome was good in the majority of cases: only 2 patients with associated endocarditis died. Neurologic sequelae were present in another 3 patients. CONCLUSION: Vertebral osteomyelitis can be caused by a variety of pathogens. Therefore, bacteriological studies are necessary to establish the etiologic diagnosis and determine the specific antimicrobial treatment required.

Ben-Arie A. et al. *Safety of extraovular catheter insertion for second-trimester abortion.* Obstet Gynecol. 2000; 96(4) : 529-32.p Abstract: OBJECTIVE: To evaluate the efficacy and safety of second-trimester abortions using transcervical catheter insertion and extraovular prostaglandin (PG) administration. METHODS: Ninety women admitted for terminations of pregnancy at 17-24 weeks' gestation had transcervical catheters inserted and extraovular PGE(2) administered. Success rates were recorded, measured by induction of abortion within 24 hours, need for a complement uterine curettage, and complications. RESULTS: The technique induced abortion in 67 women (74.4%). The induction-to-abortion median interval was 12 hours (7 and 22 hours, fifth and 95th percentiles, respectively). Thirty-seven women needed uterine curettages because of incomplete abortions or excessive uterine bleeding after fetal and placenta expulsion. One woman had shivering, weakness, and nausea attributed to systemic absorption of PG, and nine women developed systemic inflammatory response syndrome associated with transcervical catheter insertion. Two of those women had septic shock, one of whom deteriorated to a life-threatening situation. CONCLUSION: Transcervical catheter insertion for extraovular PG administration is effective for inducing second-trimester abortions. Although the method is considered safe, with generally few mild, treatable complications, we observed a high rate of systemic inflammatory response syndrome, bacteremia, and sepsis caused by transcervical catheter insertion before PG administration. A reconsideration of this method's safety is warranted.

Ben-Jacob E. et al. *Cooperative organization of bacterial colonies: from genotype to morphotype.* Annu Rev Microbiol. 1998; 52 : 779-806.p Abstract: In nature, bacteria must often cope with difficult environmental conditions. To do so they have developed sophisticated cooperative behavior and intricate communication pathways. Utilizing these elements, motile microbial colonies frequently develop complex patterns in response to adverse growth conditions on hard surfaces under conditions of energy limitation. We employ the term morphotype to refer to specific properties of colonial development. The morphologies we discuss include a tip-splitting (T) morphotype, chiral (C) morphotype, and vortex (V) morphotype. A generic modeling approach was developed by combining a detailed study of the cellular behavior and dynamics during colonial development and invoking concepts derived from the study of pattern formation in nonliving systems. Analysis of patterning behavior of the models suggests bacterial processes whereby communication leads to self-organization by using cooperative cellular interactions. New features emerging from the model include various models of cell-cell signaling, such as long-range chemorepulsion, short-range chemoattraction, and, in the case of the V morphotype, rotational chemotaxis. In this regard, pattern formation in microorganisms can be viewed as the result of the exchange of information between the micro-level (the individual cells) and the macro-level (the colony).

ben Omar N. et al. *Microbial community dynamics during production of the mexican fermented maize dough pozol*. Appl Environ Microbiol. 2000; 66(9) : 3664-73.p Abstract: The dynamics of the microbial community responsible for the traditional fermentation of maize in the production of Mexican pozol was investigated by using a polyphasic approach combining (i) microbial enumerations with culture media, (ii) denaturing gradient gel electrophoresis (DGGE) fingerprinting of total community DNA with bacterial and eukaryotic primers and sequencing of partial 16S ribosomal DNA (rDNA) genes, (iii) quantification of rRNAs from dominant microbial taxa by using phylogenetic oligonucleotide probes, and (iv) analysis of sugars and fermentation products. A Streptococcus species dominated the fermentation and accounted for between 25 and 75% of the total flora throughout the process. Results also showed that the initial epiphytic aerobic microflora was replaced in the first 2 days by heterofermentative lactic acid bacteria (LAB), including a close relative of Lactobacillus fermentum, producing lactic acid and ethanol; this heterolactic flora was then progressively replaced by homofermentative LAB (mainly close relatives of L. plantarum, L. casei, and L. delbrueckii) which continued acidification of the maize dough. At the same time, a very diverse community of yeasts and fungi developed, mainly at the periphery of the dough. The analysis of the DGGE patterns obtained with bacterial and eukaryotic primers targeting the 16S and 18S rDNA genes clearly demonstrated that there was a major shift in the community structure after 24 h and that high biodiversity-according to the Shannon-Weaver index-was maintained throughout the process. These results proved that a relatively high number of species, at least six to eight, are needed to perform this traditional lactic acid fermentation. The presence of Bifidobacterium, Enterococcus, and enterobacteria suggests a fecal origin of some important pozol microorganisms. Overall, the results obtained with different culture-dependent or -independent techniques clearly confirmed the importance of developing a polyphasic approach to study the ecology of fermented foods.

Bender A.B. et al. *[Antimicrobial effects of anesthetics and analgesics]*. Ugeskr Laeger. 1999; 161(42) : 5814-7.p Abstract: Drugs, not designed as antibiotics, and whose primary mode of action is modulation of active and passive ionic transport-mechanisms in the eucaryotic cell, also act on procaryotic cell-walls, and the action is antimicrobial. The drugs may be classified, non-antibiotics. Anaesthetic gases are bactericidal in the fluid state, and in the vaporous state at high concentrations. Local anaesthetics of the ester type have stronger antimicrobial actions than the amidetype, and synergy is found between local anaesthetics and antibiotics. Barbiturates show antimicrobial action at high concentrations, and there is a possible synergy with antibiotics. Synthetic analogs of morphine have stronger antimicrobial action than the natural derivatives. Aspirin (ASA) inhibits the growth of Klebsiella pneumoniae at concentrations within the range of that in plasma in normal clinical usage; but induces non-genetical resistance to antibiotics. Increasing problems of bacterial resistance to common antibiotics might render non-antibiotics subject to development into antibiotics, and to be utilized in combination treatment of resistant infectious diseases.

Benharrats I. et al. *[Infectious complications of implantable infusion ports in patients with HIV infection]*. Rev Med Interne. 1997; 18(6) : 443-9.p Abstract: Thirty-four implantable ports were consecutively implanted in 27 AIDS patients (mean CD4 lymphocyte count: 39/mm3) from January 1993 to December 1995. We observed 33 complications in these patients. Perioperative complications included: one pneumothorax (3%), one haematothorax (3%) and one septic shock (3%). Later complications included one venous thrombosis (3%) and 26 infectious complications (79%). Fever of unknown origin was observed in three patients (9%). A total of 19 bacteremias occurred in 12 patients. The global rate of infection for 100 catheter-days was 0.51 for a total of 5,096 catheter-days. The following microorganisms were isolated: Staphylococcus (n = 21; 72%), Pseudomonas (n = 3; 11%) and others (n = 5; 17%). Thirty-eight percent of the ports (n = 13) were removed, after a mean of 89 days. During the study, 21 patients died. Two patients died from a catheter infection with septic shock (8%). It seems to be important to clearly define the indications of implantable infusions ports in AIDS patients with respect to their life expectancy.

Bentz J.S. et al. *Acid-fast-positive Legionella pneumophila: a possible pitfall in the cytologic diagnosis of mycobacterial infection in pulmonary specimens.* Diagn Cytopathol. 2000; 22(1) : 45-8.p Abstract: The acid-fast stain is commonly used in the rapid cytologic assessment of bronchoalveolar lavage (BAL) fluid to detect pulmonary mycobacterial infections, particularly in immunocompromised patients. The identification of acid-fast, rod-shaped organisms may be taken as presumptive evidence of such an infection, in the appropriate clinical setting. However, this determination is made less specific by the occasional acid-fast positivity of microorganisms other than mycobacteria. We report on the occurrence of a fatal pneumonia caused by acid-fast positive Legionella pneumophila detected by BAL. This is a potential pitfall in the rapid diagnosis of pulmonary mycobacterial infections. Copyright 2000 Wiley-Liss, Inc.

Berbari E.F. et al. *Infective endocarditis due to unusual or fastidious microorganisms.* Mayo Clin Proc. 1997; 72(6) : 532-42.p Abstract: Infective endocarditis due to fastidious microorganisms is commonly encountered in clinical practice. Some organisms such as fungi account for up to 15% of cases of prosthetic valve infective endocarditis, whereas organisms of the HACEK group (Haemophilus parainfluenzae, H. aphrophilus, and H. paraphrophilus, Actinobacillus actinomycetemcomitans, Cardiobacterium hominis, Eikenella corrodens, and Kingella kingae) cause 3% of community-acquired cases of infective endocarditis. Special techniques are necessary to identify these microorganisms. A history of contact with mammals or birds may suggest infection caused by Coxiella burnetii (Q fever), Brucella species, or Chlamydia psittaci. A nosocomial cluster of postsurgical infective endocarditis may be caused by Legionella species or Mycobacterium species. If risk factors that are commonly associated with fungal infections (cardiac surgical treatment, prolonged hospitalization, indwelling central venous catheters, and long-term antibiotic use) are present, fungal endocarditis is possible. Patients with endocarditis and a history of periodontal disease or dental work in whom routine blood cultures are negative might have infection due to nutritionally variant streptococci or bacteria of the HACEK group. Communication between the microbiologist and the clinician is of crucial importance for identification of these microorganisms early during the course of the infection before complications such as embolization or valvular failure occur. In this article, we review the microbiologic and clinical features of these organisms and provide recommendations for diagnosis and treatment.

Berchet V. et al. *Structural analysis of the elongation factor G protein from the low-temperature-adapted bacterium Arthrobacter globiformis SI55*. Extremophiles. 2000; 4(2) : 123-30.p Abstract: The first structural analysis of elongation factor G (EF-G) from a cold-adapted bacterium is presented. EF-G is an essential protein involved in the elongation process during protein synthesis and is therefore thought to play a crucial role in the low-temperature adaptation of cold-adapted microorganisms. To define its importance, the EF-G gene (fus) from the psychrotolerant bacterium Arthrobacter globiformis SI55 was cloned and sequenced. The deduced primary structure of the elongation factor is composed of 700 amino acids with a predicted molecular mass of 77.4 kDa. A three-dimensional model of the protein was constructed based on the known crystal structures of structurally homologous proteins. Structural features that might potentially be important for activity and flexibility at low temperature were deduced by comparisons with models of the EF-G proteins from the closely related mesophiles Micrococcus luteus and Mycobacterium tuberculosis. These features include a loss in the number of salt bridges in intradomain and interdomain positions, increased solvent interactions mediated by greater charge and polar-

ity on domain surfaces, loop insertions, loss of proline residues in loop structures, and an increase of hydrophobicity in core regions. Specific changes have also been identified in the catalytic domain (G domain) and sites of potential ribosome interaction, which may directly affect guanosine triphosphate (GTP) hydrolysis and elongation rates at low temperature.

Berghmans T. et al. *Epidemiology of infections in the adult medical intensive care unit of a cancer hospital*. Support Care Cancer. 1997; 5(3) : 234-40.p Abstract: A prospective collection of positive antimicrobial cultures was performed over 12 consecutive months in the medical intensive care unit of a cancer hospital. In all, 144 infections and 163 pathogens were documented during 87 of the 528 admissions. Lung, urinary, ENT (ear, nose and throat) infections and bacteraemia were the most frequently documented. Staphylococcus species, Streptococcus species, Escherichia coli, Klebsiella species and Pseudomonas species were the most common pathogens. Gram-positive strains were observed predominantly during monomicrobial bacteraemia (48.9%). Methicillin-resistant Staphylococcus aureus (MRSA) and Staphylococcus epidermidis (MRSE) were found in 58% and 92% of the isolated strains respectively. No particular outbreak was identified. A further prospective study will be necessary to evaluate the impact of the antibiotic use on the selection of resistant strains in our ICU.

Bergogne-Berezin E. *Current guidelines for the treatment and prevention of nosocomial infections.* Drugs. 1999; 58(1) : 51-67.p Abstract: Nosocomial infections (NIs) are among the most difficult problems confronting clinicians who deal with severely ill patients. The incidence of these hospital-acquired infections varies with the size of hospitals, with specialities of wards, and with many other factors such as length of hospital stay, local trends in antibiotic usage, nursing and hygiene conditions, hospital design and geographical distribution of patients at risk. An average incidence of NI can be estimated at 5 to 10%, with higher rates in large university hospitals, reaching up to 28% in the intensive care unit (ICU). Changing epidemiology of NI and emerging resistance problems have resulted in evolving strategies of antibiotic usage in patients at risk. Several recent antibiotic resistance problems have been identified, for instance in Gram-positive organisms, and have been surveyed, in addition to those previously well known in Gram-negative bacilli. The choice of empiric antibiotic therapy for the treatment of any NI before microbiology is available has become a difficult challenge, requiring: (i) surveillance data on a regular basis of predominant organisms in units at risk; (ii) surveillance of the current resistance patterns of these organisms; (iii) identification of outbreaks involving the prevalent organisms, using modern molecular techniques for typing the strain and assess cross-contamination. In documented infection, monotherapy vs combination therapy has been often discussed in the treatment of serious Gram-negative hospital infections, but these concepts vary with the site of infection, the nature of organism involved and its pattern of resistance, the kind of antibiotic which may more or less quickly select resistant mutants. Antibiotic therapy concepts vary significantly between countries, and combinations either empirical or based on laboratory data are often preferred in European countries than in the US. Frequent collaborative studies and an increasing communication between experts of different countries, make guidelines and consensus conferences, established in a particular country, useful elsewhere and may contribute to improvement in the management of NI. Guidelines for the prevention and the control of NI are well established in many developed countries and they may have resulted in the improvement of the prevention and the treatment of NI. However, there is still potential progress that should be made, including individual preventive practices, improvement in nursing practices, control of antibiotic use, trend to shorten the hospital stay and early discharge from hospital, which results in significant cost savings.

Berkowitz F.E. et al. *Third generation cephalosporin-resistant gram-negative bacilli in the feces of hospitalized children*. Pediatr Infect Dis J. 1995; 14(2) : 97-100.p Abstract: In view of the widespread use of third generation cephalosporins in hospitalized infants, we attempted to determine whether their use was associated with the emergence of resistance in fecal Gram-negative bacilli. Stools from infants hospitalized for varying durations were cultured on MacConkey agar containing 4 micrograms/ml of cefotaxime. All isolates growing on this medium were identified and their susceptibilities to 29 antimicrobial agents were determined. Sixty-five infants were studied of whom 44 were receiving a third generation cephalosporin, 7 another antibiotic and 14 no antibiotic. Thirty-one strains resistant to third generation cephalosporins (minimal inhibitory concentrations > or = 16 micrograms/ml) to cefotaxime, ceftriaxone or ceftazidine) were isolated from 26 infants. The proportions of infants with resistant strains were not significantly different whether they were: (1) receiving a third generation cephalosporin or not; (2) hospitalized for longer or shorter than 2 days or not; (3) older or younger than 3 months or not. Notably 8 infants harbored resistant strains within 24 hours of admission. The commonest resistant strains isolated belonged to the genera Enterobacter (10), Citrobacter (6), Serratia (3), Cedecea (3) and Chromobacterium (3). In conclusion hospitalized infants had a high incidence of fecal colonization with Gram-negative bacilli resistant to third generation cephalosporins. These bacteria were predominantly those known to produce broad spectrum beta-lactamases. This colonization was not necessarily associated with the infant receiving such antibiotics or with prolonged hospitalization.

Berlau J. et al. *Distribution of Acinetobacter species on skin of healthy humans.* Eur J Clin Microbiol Infect Dis. 1999; 18(3) : 179-83.p Abstract: The distribution of the 19 currently known genospecies of Acinetobacter on human skin, i.e. forehead, forearm and toe webs, was determined. Three selective media were compared for their specificity for all genospecies of Acinetobacter. A minimal-salts agar supplemented with 1% acetate proved to be more efficient than the Leeds medium for the isolation of most genospecies in mixed culture with other bacterial species. Acinetobacter isolates were provisionally identified using biochemical tests and the DNA transformation assay of Juni. Genospecies identification was performed using amplified ribosomal DNA restriction analysis, and duplicate isolates of the same genospecies from individuals were ruled out by random amplified polymorphic DNA analysis. Over 40% of 192 healthy volunteers carried Acinetobacter spp. at one or more body sites, and the frequencies of colonisation were as follows: forearm (51%), forehead (47%) and toe web (34%). Genospecies 8/9 (Acinetobacter lwoffii) was the most common (61%), followed by genospecies 15BJ and 12 (Acinetobacter radioresistens) at 12.5% and 8%, respectively. The Acinetobacter baumannii-Acinetobacter calcoaceticus group (genospecies 1, 2, 3 and 13TU) that predominates in hospital-acquired infections was found in only one individual.

Berlau J. et al. *Isolation of Acinetobacter spp. including A. baumannii from vegetables: implications for hospital-acquired infections.* J Hosp Infect. 1999; 42(3) : 201-4.p Abstract: A. baumannii is rarely recovered from the skin of patients or healthy European subjects as other genospecies predominate, but it isa significant nosocomial pathogen. The natural reservoir of this organism is therefore uncertain. We determined the isolation rates of Acinetobacter spp. from vegetables (as an indicator of the natural environment) using a selective technique and classified the genospecies by amplified ribosomal DNA restriction analysis (ARDRA). Of the 177 samples of vegetables examined, 30 yielded Acinetobacter, with genospecies 2 and 11 being the most common, each with a frequency of 27%. MIC assays showed that strains of genospecies 1, 2, 3, and 13TU (the A. calcoaceticus-A. baumannii complex) were significantly more resistant than other genospecies to ciprofloxacin and gentamicin. Vegetables may therefore be a natural habitat of A. baumannii and provide a route by which these bacteria are introduced into hospitals with obvious implications for infection control.

Berlutti F. et al. *Expression of the virulence plasmid-carried apyrase gene (apy)*

of enteroinvasive Escherichia coli and Shigella flexneri is under the control of H-NS and the VirF and VirB regulatory cascade. Infect Immun. 1998; 66(10) : 4957-64.p Abstract: The transcription of the virulence plasmid (pINV)-carried invasion genes of Shigella flexneri and enteroinvasive Escherichia coli (EIEC) is induced at 37 degreesC and repressed at 30 degreesC. In this work, we report that the O135: K-:H- EIEC strain HN280 and S. flexneri SFZM53, M90T, and 454, of serotypes 4, 5, and 2a, respectively, produce apyrase (ATP-diphosphohydrolase), the product of the apy gene. In addition, the S. flexneri strains, but not the EIEC strain, produce a nonspecific phosphatase encoded by the phoN-Sf gene. Both apy and phoN-Sf are pINV-carried loci whose contribution to the pathogenicity of enteroinvasive microorganisms has been hypothesized but not yet established. We found that, like that of virulence genes, the expression of both the apy and the phoN-Sf genes was temperature regulated. Strain HN280/32 (a pINV-integrated avirulent derivative of HN280 which has a severe reduction of virB transcription) expressed the apy gene in a temperature-regulated fashion but to a much lower extent than wild-type HN280, while the introduction of the Deltahns deletion in HN280 and in HN280/32 induced the wild-type temperature-independent expression of apyrase. These results indicated that a reduction of virB transcription, which is known to occur in the pINV-integrated strain HN280/32, accounts for reduced apyrase expression and that the histone-like protein H-NS is involved in this regulatory network. Independent spontaneously generated mutants of HN280 and of SFZM53 which had lost the capacity to bind Congo red dye (Crb-) were isolated, and the molecular alterations of pINV were evaluated by PCR analysis. Alterations of pINV characterized by the absence of virF or virB and by the presence of the intact apy locus or intact apy and phoN-Sf loci were detected among Crb- mutants of HN280 and SFZM53, respectively. While all Crb- apy+ mutants of HN280 failed to produce apyrase, Crb- apy+ phoN-Sf+ mutants of SFZM53 lacked apyrase activity but produced a nonspecific phosphatase, like parental SFZM53. Moreover, the introduction of recombinant plasmids carrying cloned virF (pMYSH6504) or virB (pBN1) into Crb- mutants of HN280 and SFZM53 lacking virF or virB, respectively, fully restored temperature-dependent apyrase expression to levels resembling those of the parental strains. Taken together, our results demonstrate that, as has already been shown for invasion genes, apy is another locus whose expression is controlled by temperature, H-NS, and the VirF and VirB regulatory cascade. In contrast, the temperature-regulated expression of the nonspecific phosphatase does not appear to be under the control of the same regulatory network. These findings led us to speculate that apyrase may play a role in the pathogenicity of enteroinvasive bacteria.

Bernard E.O. et al. *Nitroglycerin to control blood pressure during endovascular stent-grafting of descending thoracic aortic aneurysms.* J Vasc Surg. 2000; 31(4) : 790-3.p Abstract: Temporary asystole induced with adenosine or electrically induced ventricular fibrillation has previously been proposed to prevent hypertension during transluminal placement of thoracic endovascular stent-grafts. Nitroglycerin is a safe and less invasive alternative to control blood pressure and, in contrast to the methods mentioned, can also be used during stent-grafting performed under local anesthesia.

Bernthal E. *Wedding rings and hospital-acquired infection*. Nurs Stand. 1997; 11(43) : 44-6.p Abstract: Some theatre nurses are reluctant to remove their wedding rings when scrubbing up. This article reviews the literature and concludes that keeping rings on may put the patient at risk of nosocomial (hospital-acquired) infection.

Berron S. et al. *In vitro susceptibilities of 400 Spanish isolates of Neisseria gonorrhoeae to gemifloxacin and 11 other antimicrobial agents.* Antimicrob Agents Chemother. 2000; 44(9) : 2543-4.p Abstract: The in vitro activity of gemifloxacin versus those of 11 other antimicrobial agents against 400 strains of Neisseria gonorrhoeae was determined by microdilution with supplemented GC agar. A total of 37.5% of the strains were beta-lactamase positive. A total of 70 and 6.4% of the beta-lactamase-negative strains exhibited intermediate and high-level penicillin resistance, respectively. Ceftriaxone and gemifloxacin were the most active drugs (MICs at which 90% of isolates are inhibited, 0.01 versus 0.007 microg/ml, respectively), with 100% of strains inhibited by 0.12 microg/ml.

Bertrand S. et al. *Preliminary experience with Silzone-coated St. Jude medical valves in acute infective endocarditis.* J Heart Valve Dis. 2000; 9(1) : 131-4.p Abstract : BACKGROUND AND AIM OF THE STUDY: The rate of recurrent postoperative endocarditis after valve replacement in early-stage acute infective endocarditis is extremely high. Metallic silver coating of the sewing ring may improve the short- and long-term outcome after valve implantation. This report details our experience with the St. Jude Medical Silzone prosthesis in early surgical treatment of acute infective endocarditis. METHODS: Ten patients (mean age 66.4 years) referred for native valve or prosthetic valve endocarditis were operated on between April 1998 and June 1999. The microorganisms responsible for the acute infection were Staphylococcus (n = 1), Streptococcus (n = 1) and Pseudomonas aeruginosa (n = 1); blood cultures remained negative in two cases. The indication for surgical treatment was related to hemodynamic condition (n = 5), a major cerebral event (stroke; n = 1), annulus abscess (n = 1), and echocardiographic evidence of large cuspal vegetations (n = 3). All patients had received preoperative intravenous antibiotics (mean 7.8 days). Four mitral, five aortic valve replacements, and one double mitral-aortic valve replacement, were performed after extensive debridement of the infected and necrotic tissues. Mean duration of postoperative antibiotic treatment was 32.3 days. Postoperative follow up (mean 6 months; range: 2-14.2 months) was 100% complete, and included prospective repeated transthoracic echocardiography at one week, and one, six and 12 months postoperatively. RESULTS: One patient died early in the immediate postoperative period from pneumonia and major hypoxemia. All other patients are symptom-free, without evidence of recurrent infection and perivalvular leak. CONCLUSION: Although these early results with the St. Jude Medical Silzone prosthesis require confirmation by more extensive studies, they infer that silver coating of the sewing ring may dramatically improve management of patients with active endocarditis.

Bertrand X. et al. *Clinical and molecular epidemiology of hospital Enterococcus faecium isolates in eastern France. Members of Reseau Franc-Comtois de Lutte contr les Infections Nosocomiales.* J Hosp Infect. 2000; 45(2) : 125-34.p Abstract: We carried out a surveillance study of Enterococcus faecium isolates in the Franche-Comteregion of France over three years. Clinical and epidemiological strains were characterized by antibiotype and genotype (pulsed field gel electrophoresis, PFGE). Three case-control studies were performed to identify risk factors for colonization/infection with three defined resistant phenotypes (amoxycillin, high-level gentamicin and high-level kanamycin). The crude incidence of colonization/infection was 0.156%, and 68.8% of cases were classified as hospital-acquired. Incidence did not differ according to the type of hospitalization (middle term or acute care). The urinary tract was the major site of infection. Resistance rates were: 45.8% (amoxycillin), 18.7% (high-level gentamicin), 61.4% (high-level kanamycin) and 3.1% (vancomycin). No isolate produced b-lactamase and one isolate carried the vanA gene. PFGE revealed two major epidemic patterns each including resistant strains isolated in different hospitals and during different periods in the study. Previous antimicrobial treatment was not identified as a risk factor for colonization/infection with any resistant phenotype. Despite the low frequency of vancomycin-resistant isolates in this study, resistant strains were widely disseminated and had characteristics enabling them to persist and spread. If these strains acquired the vanA gene, the risk of an outbreak would be large. So, the prevalence of vancomycin-resistant E. faecium in hospitals should be carefully monitored in the future. Copyright 2000 The Hospital Infection Society.

Besimo C.E. et al. *Prevention of bacterial leakage into and from prefabricated screw-retained crowns on implants in vitro.* Int J Oral Maxillofac Implants. 1999; 14(5) : 654-60.p Abstract: Previous in vitro studies have shown that a mean gap of less than 4 microns between prefabricated crowns and implants of the Ha-Ti implant system is not a barrier to infiltration by Staphylococcus aureus. These studies confirmed earlier in vivo work showing that a multitude of oral microorganisms could colonize and infiltrate these gaps. In the present investigation, 30 Ha-Ti implant-crown assemblies were tested for bacterial leakage after the gaps were sealed with the chlorhexidine-containing varnish Cervitec. S. aureus leakage into the totally submerged test specimens was detected in 1 of 5 samples incubated for 4 weeks, while no leakage was detected in specimens incubated for 3, 5, 6, 7, and 8 weeks. When the sealed test specimens were partially submerged (that is, excluding the screw hole of the crown) and incubated for 3 to 11 weeks, none of the internal surfaces of the 30 test specimens manifested contamination. The clinical relevance of gap sealing in maintaining inflammation-free marginal mucosa and in achieving clinically successful treatment of peri-implantitis has yet to be determined.

Besser T.E. et al. *Multiresistant Salmonella Typhimurium DT104 infections of humans and domestic animals in the Pacific Northwest of the United States.* Epidemiol Infect. 2000; 124(2) : 193-200.p Abstract: Salmonella Typhimurium definitive type 104 with chromosomally encoded resistance to five or more antimicrobial drugs (R-type ACSSuT+) has been reported increasingly frequently as the cause of human and animal salmonellosis since 1990. Among animal isolates from the northwestern United States (NWUS), R-type ACSSuT+ Typhimurium isolates increased through the early 1990s to comprise 73% of Typhimurium isolates by 1995, but subsequently decreased to comprise only 30% of isolates during 1998. NWUS S. Typhimurium R-type ACSSuT+ were consistently (99%) phage typed as DT104 or the closely related DTu302. S. Typhimurium isolates from cattle with primary salmonellosis, randomly selected from a national repository, from NWUS were more likely to exhibit R-type ACSSuT+ (19/24, 79%) compared to isolates from other quadrants (17/71, 24%; $P < 0.01$). Human patients infected with R-type ACSSuT+ resided in postal zip code polygons of above average cattle farm density ($P < 0.05$), while patients infected with other R-types showed no similar tendency. Furthermore, humans infected with R-type ACSSuT+ Typhimurium were more likely to report direct contact with livestock ($P < 0.01$) than humans infected with other R-types.

Best L.M. et al. *Helicobacter pylori: primary susceptibility to clarithromycin in vitro in Nova Scotia.* Can J Gastroenterol. 1997; 11(4) : 298-300.p Abstract: Resistance to antimicrobial agents is a major determinant of the efficacy of regimens to eradicate Helicobacter pylori. Clarithromycin (CLA) has become one of the most commonly used antibiotics for treatment of H pylori infection. In this study, the rate of primary resistance to CLA in H pylori isolated from patients was determined. One hundred sixty-two strains were recovered from patients before treatment. Strains were grown and inoculated onto Mueller-Hinton agar with 7% sheep blood. CLA epsilometer gradient agar diffusion test (E test) strips were used to test for susceptibility. Appropriate control organisms were tested to validate the assay. Plates were incubated at 37 degrees C in a microaerophilic atmosphere for up to five days. E test results were easy to interpret. Strains were considered resistant if the minimum inhibitory concentration (MIC) was 2 micrograms/mL or greater. Three strains were resistant (two strains with MIC 8 micrograms/mL and one strain with MIC 12 micrograms/mL) and 159 strains were sensitive (MICs ranged from less than 0.016 to 0.38 micrograms/mL). Ninety per cent of the strains had MICs of 0.023 micrograms/mL. Primary resistance was 1.8%. These susceptibility data support the use of CLA for the treatment of H pylori in the Nova Scotia population.

Betriu C. et al. *[Bacteremias in a university hospital: study of etiologic agents and their sensitivity patterns].* Rev Clin Esp. 1999; 199(8) : 503-10.p Abstract: OBJECTIVE: To determine the bacterial etiology of bacteremic episodes recorded at our hospital during 1995 and their antimicrobial susceptibility patterns. METHODS: The microbiological records of all bacteremic episodes detected at our hospital from January to December 1995 were analysed. The susceptibility patterns of the 334 gram-positive aerobic isolates to 11 antimicrobials and of 236 gram-negative aerobic isolates to 16 antimicrobial agents were determined. The reference agar dilution method was used for these determinations. RESULTS: The incidence of bacteremia was 19.3/1,000 admissions. Gram-positive aerobic bacteria accounted for 56.6% of monomicrobial bacteremias; the microorganisms recovered most frequently were coagulase-negative staphylococci (22.4%), Escherichia coli (16.5%) and Staphylococcus aureus (14.2%); 75 polymicrobial episodes were recorded. Over half of bacteremic episodes occurred at medical services. Hematologic diseases and solid tumours were the most common underlying diseases. No resistance to glycopeptides was observed among the staphylococci studied. The incidence of resistance to vancomycin in enterococci was small (1.5%). The aminoglycosides tested and some beta lactams showed good activity against the gram-negative bacilli studied. CONCLUSIONS: To carry out an epidemiologic surveillance of bacteremic episodes occurring at every hospital it is necessary to provide information on trends observed in the etiology of such infections, possible outbreaks, antimicrobial resistance, and uncommon pathogens.

Betriu C. et al. *In-vitro susceptibilities of species of the Bacteroides fragilis group to newer beta-lactam agents.* J Antimicrob Chemother. 1999; 43(1) : 133-6.p Abstract: The in-vitro activities of imipenem and four beta-lactam-beta-lactamase inhibitor combinations were tested against 816 strains of the Bacteroides fragilis group, and compared with other anti-anaerobic agents. None of the strains was resistant to metronidazole, and only one was resistant to chloramphenicol. Mezlocillin and piperacillin were moderately active, while clindamycin was the least active. Rates of resistance varied between various species. The new beta-lactam agents tested showed excellent activity; piperacillin-tazobactam and imipenem were the most active. The emergence of strains that are resistant to these agents, observed in this study, suggests there is a need to perform periodic antimicrobial susceptibility tests.

Bettner M.D. et al. *Effect of ultrasonic cleaning on microorganisms.* Am J Dent. 1998; 11(4) : 185-8.p Abstract: PURPOSE: To establish a method to measure microbial kill caused by ultrasonic cleaning. Secondarily, to estimate the escape of bacteria from the ultrasonic cleaning solutions during operation of the unit. MATERIALS AND METHODS: Three commercial enzymatic detergents and saline were used as cleaners. Depending on detergent, initial operational temperature was 21 degrees C, 37 degrees C or 60 degrees C. Streptococcus mutans ATCC 25175 (S. mutans suspensions) was adjusted to a final concentration of 1.0 x 10(3) cells/mL in saline. Suspensions (2000 mL) at the desired temperatures were added to the cleaner. Aliquots were removed, serially diluted in letheen broth and spread plated over mitis salivarius agar. Appropriate amounts of detergent solutions were added to S. mutans suspensions and the cleaner operated for 20 minutes. Aliquots were then removed and plated. The process was repeated twice. Plates were aerobically incubated at 37 degrees C for 7 days and the colonies counted. The procedure was repeated using three temperatures of S. mutans suspensions (21 degrees C, 37 degrees C or 60 degrees C), but without detergent or ultrasound. Also, detergents were added to 21 degrees C S. mutans suspensions and allowed to sit for 20 minutes without ultrasonic cleaning. Microbial sampling was done as previously described. RESULTS: Results when ultrasound was used indicated that little kill (5-15%) occurred in 21 degrees C or 37 degrees C detergent solutions. Greater kill (25-35%) was noted with 21 degrees C and 37 degrees C saline. Complete kill was accomplished with 60

degrees C saline or the 60 degrees C detergent solution. When ultrasound and detergent were not used, there was no kill in 21 degrees C and 37 degrees C saline, but complete kill in 60 degrees C saline. In the absence of ultrasound no kill was noted in 21 degrees C S. mutans suspensions to which detergent had been added. Total kill of S. mutans was observed in 60 degrees C saline or 60 degrees C detergent with ultrasound or after a 20-minute exposure in 60 degrees C saline without ultrasonic cleaning. Very few bacteria escaped from the ultrasonic cleaning solutions into the air during the cleaning process. Placement of the unit lid effectively reduced emissions to zero.

Beuchat L.R. et al. *Efficacy of spray application of chlorinated water in killing pathogenic bacteria on raw apples, tomatoes, and lettuce.* J Food Prot. 1998; 61(10) : 1305-11.p Abstract: Washing whole and cut produce by dipping or submerging in chlorinated water has a sanitizing effect, although reduction in microbial populations is minimal and is usually less than 100-fold. A study was undertaken to evaluate the efficacy of a spray application of chlorine in killing Salmonella, Escherichia coli O157:H7, Listeria monocytogenes, yeasts and molds, and total aerobic mesophilic microorganisms on whole apples, tomatoes, and lettuce leaves. Inoculated produce was treated (sprayed and then soaked) with water (control) or solutions containing 200 or 2,000 ppm of chlorine for 0, 1, 3, 5, or 10 min, rinsed with sterile water, and analyzed for populations (CFU/cm2) of target microorganisms. Compared to the control treatment, further reductions in numbers of pathogens of 0.35 to 2.30 log CFU/cm2 were achieved by treatment with chlorine. Chlorine was generally more effective at 2,000 ppm than at 200 ppm. Inactivation of microorganisms occurred essentially within 1 min after application of chlorine. These reductions are significant relative to populations of pathogenic microorganisms that may be present on produce. Spray application of chlorine to raw produce at food service or household levels may be a suitable, and more convenient, alternative to treatment by dipping or submersion.

Beuchat L.R. et al. *Produce handling and processing practices.* Emerg Infect Dis. 1997; 3(4) : 459-65.p Abstract: In the past decade, outbreaks of human illness associated with the consumption of raw vegetables and fruits (or unpasteurized products produced from them) have increased in the United States. Changes in agronomic, harvesting, distribution, processing, and consumption patterns and practices have undoubtedly contributed to this increase. Pathogens such as Listeria monocytogenes, Clostridium botulinum, and Bacillus cereus are naturally present in some soil, and their presence on fresh produce is not rare. Salmonella, Escherichia coli O157:H7, Campylobacter jejuni,Vibrio cholerae, parasites, and viruses are more likely to contaminate fresh produce through vehicles such as raw or improperly composted manure, irrigation water containing untreated sewage, or contaminated wash water. Contact with mammals, reptiles, fowl, insects, and unpasteurized products of animal origin offers another avenue through which pathogens can access produce. Surfaces, including human hands, which come in contact with whole or cut produce represent potential points of contamination throughout the total system of growing, harvesting, packing, processing, shipping, and preparing produce for consumption. Treatment of produce with chlorinated water reduces populations of pathogenic and other microorganisms on fresh produce but cannot eliminate them. Reduction of risk for human illness associated with raw produce can be better achieved through controlling points of potential contamination in the field; during harvesting; during processing or distribution; or in retail markets, food-service facilities, or the home.

Bhalla P. et al. *Antimicrobial susceptibility and plasmid profile of Neisseria gonorrhoeae in India (New Delhi).* Sex Transm Infect. 1998; 74(3) : 210-2.p Abstract: OBJECTIVES: To determine the antibiotic susceptibility and plasmid profile of all Neisseria gonorrhoeae strains (PPNG and non-PPNG) isolated from May 1995 to March 1996 in Lok Nayak Hospital, New Delhi, India. METHODS: The agar plate dilution method was used to determine the minimum inhibitory concentration of five antimicrobials including norfloxacin and ceftriaxone which are most commonly used for treatment of gonorrhoea in Delhi. Isolates were screened for production of penicillinase by paper acidometric method and plasmid analysis of PPNG and non-PPNG was carried out by agarose gel electrophoresis. RESULTS: 50 consecutive isolates of N gonorrhoeae were studied, 8% among them were found to be PPNG while 28% were highly resistant to tetracycline (TRNG). Reduced susceptibility to norfloxacin (MIC > or = 1 microgram/ml) was observed in 12% of all isolates. All PPNG harboured the 4.4 MDa beta lactamase plasmid along with the 25.2 MDa tetracycline resistance plasmid. Norfloxacin resistance (MIC > or = 1 microgram/ml) was present in 28.5% of TRNG but only in 5.5% of the other gonococcal isolates. CONCLUSIONS: Results of this study clearly demonstrate that antibiotic resistant gonococcal strains of different clones are frequently found in New Delhi. Continued surveillance of susceptibility to currently prescribed antimicrobials and epidemiological studies are essential to prevent treatment failures leading to further spread of resistant strains.

Bhat A.W. et al. *Infective endocarditis in infants and children.* Indian J Pediatr. 1996; 63(2) : 204-9.p Abstract: Due to changing characteristics of infective endocarditis in the past two decades, we, retrospectively analysed 28 cases of infective endocarditis in children of age less than 15 years at Sher-i-Kashmir Institute of Medical Sciences, Soura, Srinagar from December, 1983 to November, 1993. The incidence of disease was observed as 1.5 cases/1000 children admitted with a M:F ratio of 2:1. Three patients were of age less than 2 years (group I) as 25 were above 2 years of age (group II). The two groups had significant difference in portal of entry of infection, infective microorganisms, echocardiography and prognosis. Congenital heart disease was the commonest underlying cardiac lesion in 24 (85.71%) patients. Portal of entry of infection was apparent in 35.71% only; dental route being more frequent in group II. Streptococcus viridans (in 9 cases) followed by staphylococcus aureus (in 4 cases) were the two common organisms isolated. Patients were treated, for a period of 4-6 weeks with a over all mortality rate of 25%. Factors associated with poor prognosis were age < 2 years, staphylococcal infection ad negative blood cultures. Heart failure resistant to medical therapy was a leading cause of death.

Bhuiyan B.U. et al. *Antimicrobial susceptibilities and plasmid contents of Neisseria gonorrhoeae isolates from commercial sex workers in Dhaka, Bangladesh: emergence of high-level resistance to ciprofloxacin.* J Clin Microbiol. 1999; 37(4) : 1130-6.p Abstract: Commercial sex workers (CSWs) serve as the most important reservoir of sexually transmitted diseases (STD), including gonorrhea. Periodic monitoring of the antimicrobial susceptibility profile of Neisseria gonorrhoeae in a high-risk population provides essential clues regarding the rapidly changing pattern of antimicrobial susceptibilities. A study concerning the prevalence of gonococcal infection among CSWs was conducted in Bangladesh. The isolates were examined with regards to their antimicrobial susceptibility to, and the MICs of, penicillin, tetracycline, ciprofloxacin, cefuroxime, ceftriaxone, and spectinomycin by disk diffusion and agar dilution methods. The total plasmid profile of the isolates was also analyzed. Of the 224 CSWs, 94 (42%) were culture positive for N. gonorrhoeae. There was a good correlation between the results of the disk diffusion and agar dilution methods. Some 66% of the isolates were resistant to penicillin, and 34% were moderately susceptible to penicillin. Among the resistant isolates, 23.4% were penicillinase-producing N. gonorrhoeae (PPNG). 60.6% of the isolates were resistant and 38.3% were moderately susceptible to tetracycline, 17.5% were tetracycline-resistant N. gonorrhoeae, 11.7% were resistant and 26.6% had reduced susceptibility to ciprofloxacin, 2.1% were resistant and 11.7% had reduced susceptibility to cefuroxime, and 1% were resistant to ceftriaxone. All PPNG isolates contained a 3.2-MDa African

type of plasmid, and a 24.2-MDa conjugative plasmid was present in 34.1% of the isolates. Since quinolones such as ciprofloxacin are recommended as the first line of therapy for gonorrhea, the emergence of significant resistance to ciprofloxacin will limit the usefulness of this drug for treatment of gonorrhea in Bangladesh.

Bianchetti M.G. et al. *[Antibiotic treatment of urinary tract infections in hospitalized children].* Schweiz Med Wochenschr. 1995; 125(6) : 201-6.p Abstract: From 1980 to 1991 237 patients (aged 1 week to 15 years) with moderate to severe urinary tract infection had been treated at the Department of Pediatrics University of Berne, Switzerland. Bacterial etiology, antimicrobial in vitro susceptibility tests, and drug management were retrospectively analyzed. 266 bacterial pathogens were isolated from these patients. Escherichia coli was the most frequent etiologic agent (203), followed by Enterococcus (21), Klebsiella (20), Proteus (12), Pseudomonas (6), Enterobacter (2) and Serratia (2).The overall in vitro susceptibility of these isolates was 61% for aminopenicillins, 80% for co-amoxiclav, 83% for co-trimoxazole and 92% for aminoglycosides. Aminoglycosides were ineffective in vitro only against enterococci. However, since all enterococcal strains were always sensitive to aminopenicillins, none of the pathogens was concomitantly resistant to both aminoglycosides and aminopenicillins. Parenteral therapy had been given initially in 141 patients (59%); aminopenicillin and aminoglycoside in 105, and aminopenicillin alone in 36 cases (cefuroxime instead of aminopenicillin in some patients with suspected allergy to penicillin). 96 patients (41%) were initially treated with oral antibiotics (cotrimoxazole, aminopenicillin or co-amoxiclav). The initial antimicrobial regimen had to be modified in 31 cases (13%). In children with moderate to severe urinary tract infection prompt sterilization of urine and kidneys will prevent or suppress renal tissue lesions. The in vitro susceptibility results observed in the pathogens isolated in the patients prompt us to suggest that the above mentioned goal can only be achieved by an initial regimen consisting of an aminopenicillin and an aminoglycoside compound administered parenterally.

Bianchi M. et al. *The usefulness of blood culture in diagnosing HIV-related systemic mycoses: evaluation of a manual lysis centrifugation method.* Med Mycol. 2000; 38(1) : 77-80.p Abstract: The results of 5034 blood cultures, implementing a lysis-centrifugation method with saponin, are summarized in this paper. Three hundred and twenty-two blood samples (6.3%) obtained from a pool of human immunodeficiency virus (HIV)-positive patients yielded fungi. Cryptococcus neoformans was isolated in 199 samples (3.95%), Histoplasma capsulatum in 95 (1.89%). Candida parapsilosis in 12 (0.23%), C. albicans in 7 (0.13%), C. tropicalis in 2, C. krusei in 1, C. guillermondii in 1, and Prototheca wickerhamii in 4 (0.07%). Blood cultures were positive for C. neoformans in 76.23% of patients having a diagnosis of cryptococcosis and in 89.65% of those who had histoplasmosis. The blood culture was the first means of confirming the diagnosis in 23.8% of the patients with cryptococcosis and in 54% with histoplasmosis. In the four patients in whom P. wickerhamii was isolated, a diagnosis of disseminated protothecosis was not achieved by other findings. Catheter infections were responsible for the majority of recovered Candida spp.

Biedenbach D.J. et al. *Antimicrobial activity of gatifloxacin tested against Neisseria gonorrhoeae using three methods and a collection of fluoroquinolone-resistant strains.* Diagn Microbiol Infect Dis. 1998; 32(4) : 307-11.p Abstract: Gatifloxacin, a new 8-methoxy fluoroquinolone, was tested against 131 strains of Neisseria gonorrhoeae by reference agar dilution, disk diffusion, and Etest (AB BIODISK, Solna, Sweden) methods on supplemented GC agar. Gatifloxacin activity was equal to ciprofloxacin (MIC50, 0.008 microgram/mL) against strains fully susceptible to fluoroquinolones, but was generally four-fold more active (MIC90, 0.064-0.094 microgram/mL) against strains with par C or gyr A mutations and resistance to ciprofloxacin. Etest results were comparable to those generated by the agar dilution test [correlation coefficient (r) = 0.97]. Gatifloxacin zone diameters using 5-microgram disks also correlated well (r = 0.86-0.87) with the agar dilution and Etest MIC results. Breakpoints for laboratory testing of Neisseria gonorrhoeae strains await clinical trial outcome correlations, but susceptibility at < or = 0.125 or < or = 0.25 microgram/mL (> or = 34 mm) seems appropriate. All three tests used in this study seem applicable for laboratory testing of isolates from patients with uncomplicated gonorrhoeae receiving therapy with gatifloxacin.

Biedenbach D.J. et al. *In vitro evaluation of cefepime and other broad-spectrum beta-lactams in Taiwan medical centers. The Taiwan Antimicrobial Resistance Study Group.* Diagn Microbiol Infect Dis. 1999; 35(4) : 299-305.p Abstract: The rates of resistance to commonly used antimicrobial agents have been documented to be at alarmingly high levels in Taiwan for both Gram-positive and Gram-negative species. This study was conducted to assess the current resistance patterns in six medical centers strictly controlled using a common MIC methodology and quality assurance measures. Cefepime, a new clinically introduced broad-spectrum "fourth-generation" cephalosporin, was compared to other members in this class including ceftazidime, cefpirome, ceftriaxone, piperacillin/tazobactam, and imipenem. These antimicrobials were tested against ten species groups of common clinical isolates of Enterobacteriaceae, non-enteric Gram-negative bacilli, and oxacillin-susceptible Staphylococcus spp. The results confirmed that extended spectrum beta-lactamase (ESBL) production in Klebsiella spp. (21.7%) and Escherichia coli (16.7%) was common in all medical centers surveyed. Cefepime was more active against these two species as well as against Amp C producing species, indole-positive Proteae, and Acinetobacter species. The activity of cefepime was comparable although slightly less than that of ceftazidime against Serratia spp. and Pseudomonas aeruginosa strains. All or nearly all staphylococci isolates were susceptible to the beta-lactam antimicrobial agents, except for ceftazidime. Overall, these antimicrobial agents had descending spectrums of activity as follows: imipenem > cefepime > cefpirome > piperacillin/tazobactam > ceftazidime > ceftriaxone for the 550 isolates tested. Cefepime seems to be an important broad-spectrum beta-lactam that can be used with confidence against many important pathogens in Taiwan, including those harboring resistance mechanisms. A continued surveillance program seems prudent for this geographic area.

Biedenbach D.J. et al. *Comparative assessment of Etest for testing susceptibilities of Neisseria gonorrhoeae to penicillin, tetracycline, ceftriaxone, cefotaxime, and ciprofloxacin: investigation using 510(k) review criteria, recommended by the Food and Drug Administration.* J Clin Microbiol. 1996; 34(12) : 3214-7.p Abstract: We evaluated the ability of the Etest (AB Biodisk, Solna, Sweden) method to accurately and reproducibly determine the antimicrobial susceptibility of Neisseria gonorrhoeae. One hundred gonococcal isolates were used to evaluate the diagnostic performance of the Etest compared with the reference agar dilution method for penicillin, tetracycline, ciprofloxacin, and ceftriaxone. Between 92 and 99% of Etest MIC results for all drugs were within +/- 1 log2 dilution of the reference MIC. According to recommended interpretive criteria, ceftriaxone, cefotaxime, and ciprofloxacin had 100% categorical agreement, while penicillin (86%) and tetracycline (85%) categorical agreement percentages were lower because of the large number of strains that were within 0.5 to 1 log2 dilution of the susceptible or resistant breakpoints. Reproducibility data also demonstrated that the Etest was precise (99.1%) when subjected to replicate testing. On the basis of these data, the Etest method provides an effective, simple alternative to the reference agar dilution method for the direct quantification of N. gonorrhoeae susceptibility.

Biedenbach D.J. et al. *Fluoroquinolone-resistant Haemophilus influenzae: frequency of occurrence and analysis of confirmed strains in the SENTRY antimicrobial surveillance program (North and Latin America).* Diagn Microbiol Infect Dis. 2000; 36(4) : 255-9.p Abstract: The inci-

dence of fluoroquinolone-resistant (FQR) Haemophilus influenzae and Moraxella catarrhalis isolated from clinical specimens remains very rare, and the identification of such strains has been previously limited to case reports from diverse geographic locations. During the 1997 through 1998 SENTRY Antimicrobial Surveillance Program, four FQR-H. influenzae (0.13% of all strains) and one FQR-M. catarrhalis strains were identified and confirmed as having elevated MICs to > or =5 FQ class drugs. Among H. influenzae strains, MICs to marketed FQs were > or =0.12 microg/ml with ciprofloxacin MIC results > or =8-fold higher than wild type susceptible strains. The FQR-H. influenzae isolates were then compared with two previously reported strains that were determined to be identical using ribotyping and other molecular methods. In contrast, the SENTRY isolates were all genetically distinct and had mutations in parC and/or gyrA. Isolates having the lowest MIC elevations had a single mutation in gyrA, while isolates with higher MICs had at least one mutation in both studied genes. In general, the single gyr A mutations involved the same position but differed in the amino acid substitution (Ser84Leu or Phe or Ala). The isolates reported outside the SENTRY Program (controls) had an unusual mutation in par C (Gly82Asp) and two mutations in gyr A; producing the highest recorded FQR MICs. The FQR-M. catarrhalis strain was discovered in late 1997 and has been reported before. Although detection of these FQR isolates remains at <1% of all contemporary H. influenzae and M. catarrhalis isolates, surveillance programs will be an important detection method to determine the extent of emerging novel resistance patterns among clinically prevalent fastidious pathogens.

Biermann C. et al. *Isolation of Abiotrophia adiacens from a brain abscess which developed in a patient after neurosurgery.* J Clin Microbiol. 1999; 37(3) : 769-71.p Abstract: We report the case of a patient who developed a large brain abscess after neurosurgery. Cerebrospinal fluid from the abscess drainage yielded Abiotrophia adiacens-specific PCR products and microorganisms that were identified by conventional microbiological methods and by 16S ribosomal DNA analysis as Abiotrophia adiacens, which was formerly classified as a member of nutritionally variant streptococci.

Bifani P.J. et al. *Origin and interstate spread of a New York City multidrug-resistant Mycobacterium tuberculosis clone family.* JAMA. 1996; 275(6) : 452-7.p Abstract: OBJECTIVE—To determine whether isolates of Mycobacterium tuberculosis from New York and elsewhere that are resistant to four or more primary antimicrobial agents and responsible for widespread disease in the 1990s represent a newly emerged clone or a heterogeneous array of unrelated organisms. SETTING—New York City area and selected locations in the United States. PATIENTS—M tuberculosis isolates from 1953 patients in New York and multidrug-resistant isolates from six patients from other US communities. DESIGN—Convenience sample of all M tuberculosis strains (M tuberculosis isolates resistant to rifampin, streptomycin, isoniazid, and ethambutol, and sometimes ethionamide, kanamycin, capreomycin, or ciprofloxacin) submitted to the Public Health Research Institute Tuberculosis Center since 1991 and samples submitted to the Centers for Disease Control and Prevention from throughout the United States. The samples submitted were representative of the New York City strains of M tuberculosis. MAIN OUTCOME MEASURE—Characterization of resistant M tuberculosis strains studied by IS6110 and polymorphic GC-rich repetitive sequence (PGRS) hybridization patterns, multiplex polymerase chain reaction (PCR) analysis, and automated DNA sequencing of genes containing mutations associated with resistance to rifampin (rpoB), isoniazid (katG and inhA locus), and streptomycin (strA and rrs). RESULTS—Multidrug-resistant M tuberculosis isolates were recovered from 253 New York City patients and had the same or closely allied IS6110 and PGRS patterns, multiplex PCR type, and gene mutations associated with resistance to rifampin, isoniazid, and streptomycin. Isolates with these same molecular characteristics were recovered from patients in Florida and Nevada, health care workers in Atlanta, Ga, and Miami, Fla, and an individual who recently moved from New York City to Denver, Colo, and caused disease or skin test conversion in at least 12 people in a nursing home environment. CONCLUSIONS—The results document the molecular origin and spread of progeny of a closely related family of multidrug-resistant M tuberculosis strains that have recently shared a common ancestor and undergone clonal expansion. The multidrug-resistant phenotype in these organisms arose by sequential acquisition of resistance-conferring mutations in several genes, most likely as a consequence of antibiotic selection of randomly occurring mutants in concert with inadequately treated infections. Dissemination of these difficult-to-treat bacteria throughout New York City and to at least four additional US cities has adverse implications for tuberculosis control in the 21st century.

Billeter M. *Rationale and experience in treating suspected hospital-based mixed infections.* Pharmacotherapy. 1995; 15(1 Pt 2) : 22S-26S.p Abstract: Ochsner Foundation Hospital of the Ochsner Medical Institutions (OMI), a 532-bed tertiary care facility in New Orleans, uses a formulary review process common to many institutions. Considered in the selection of antimicrobial therapy are efficacy, safety, and cost. At OMI, ticarcillin-clavulanate plus gentamicin are the standard broad-spectrum antimicrobial agents for initial treatment of suspected mixed infections. The pharmacy department provides an aminoglycoside-monitoring program and convenient dosing guidelines. The regimen has resulted in good therapeutic outcomes and few adverse effects. Bacterial resistance has not been detected. Future plans include a large-scale concurrent review of patient outcomes, resistance patterns, and rates of fungal overgrowth associated with these agents.

Bina J.E. et al. *Helicobacter pylori uptake and efflux: basis for intrinsic susceptibility to antibiotics in vitro.* Antimicrob Agents Chemother. 2000; 44(2) : 248-54.p Abstract: We previously demonstrated (M. M. Exner, P. Doig, T. J. Trust, and R. E. W. Hancock, Infect. Immun. 63:1567-1572, 1995) that Helicobacter pylori has at least one nonspecific porin, HopE, which has a low abundance in the outer membrane but forms large channels. H. pylori is relatively susceptible to most antimicrobial agents but less susceptible to the polycationic antibiotic polymyxin B. We demonstrate here that H. pylori is able to take up higher basal levels of the hydrophobic fluorescent probe 1-N-phenylnaphthylamine (NPN) than Pseudomonas aeruginosa or Escherichia coli, consistent with its enhanced susceptibility to hydrophobic agents. Addition of polymyxin B led to a further increase in NPN uptake, indicative of a self-promoted uptake pathway, but it required a much higher amount of polymyxin B to yield a 50% increase in NPN uptake in H. pylori (6 to 8 microg/ml) than in P. aeruginosa or E. coli (0.3 to 0.5 microg/ml), suggesting that H. pylori has a less efficient self-promoted uptake pathway. Since intrinsic resistance involves the collaboration of restricted outer membrane permeability and secondary defense mechanisms, such as periplasmic beta-lactamase (which H. pylori lacks) or efflux, we examined the possible role of efflux in antibiotic susceptibility. We had previously identified in H. pylori 11637 the presence of portions of three genes with homology to potential restriction-nodulation-division (RND) efflux systems. It was confirmed that H. pylori contained only these three putative RND efflux systems, named here hefABC, hefDEF, and hefGHI, and that the hefGHI system was expressed only in vivo while the two other RND systems were expressed both in vivo and in vitro. In uptake studies, there was no observable energy-dependent tetracycline, chloramphenicol, or NPN efflux activity in H. pylori. Independent mutagenesis of the three putative RND efflux operons in the chromosome of H. pylori had no effect on the in vitro susceptibility of H. pylori to 19 antibiotics. These results, in contrast to what is observed in E. coli, P. aeruginosa, and other clinically important gram-negative bacteria, suggest that active efflux does not play a role in the intrinsic resistance of H. pylori to antibiotics.

Binsztein N. et al. *[Antimicrobial resistance among species of Salmonella, Shigella, Escherichia, and aeromonas isolated from children with diarrhea in 7 Argentinian centers].* Rev Latinoam Microbiol. 1999; 41(3) : 121-6.p Abstract: The increasing levels of resistance of enteropathogenic bacteria against antimicrobial agents present geographic variations. We have analysed the antimicrobial susceptibility of isolates obtained from 4,364 children under 5 years of age with acute diarrhea, in 7 cities of Argentina. Diarrheagenic E. coli exhibited 74.5% of resistance against ampicillin, 64.2% against sulfametoxazole-trimethoprim, and Shigella spp., 62% and 75.6% respectively. Salmonella sp. showed 35%, 14%, 41.8%, 65.4%, 14.5%, and 13.6% of resistance against ampicillin, chloranfenicol, sulfametoxazole-trimetoprim, sulfadiazin, gentamycin, and fosfomycin respectively. These values are higher than the ones observed in developed countries. Aeromonas showed significantly lower resistance percentage. Important differences in our country were observed, consequently, local trials should be carried out in order to apply corrective measures.

Birawska I. et al. *[Evaluation of in vitro susceptibility of hospital bacterial isolates to piperacillin and tazocin (piperacillin/tazobactam].* Med Dosw Mikrobiol. 1998; 50(1-2) : 41-6.p Abstract: Due to increasing frequency of infections caused by pathogens that are resistant to beta-lactam antibiotics, combinations of such antibiotics and beta-lactamase inhibitors were introduced into therapy in last few years. Tazobactam is the most potent beta-lactamase inhibitor. The purpose of the study was to evaluate in vitro susceptibility to piperacillin and piperacillin with tazobactam of 256 isolates cultured from biological samples obtained from 203 patients. The biological materials obtained were as follows: urine (44.9%), post-operative and post-traumatic wound swabs (27.3%), BAL (12.1%), blood (6.6%), drain swabs and other (5.5%). The isolates predominantly found were Escherichia coli (22.3%), Pseudomonas aeruginosa (16.0%), Staphylococcus aureus MSSA (13.7%), Proteus mirabilis (11.7%) and other. There were 95.5% of strains found susceptible to piperacillin with tazobactam and only 4.3% resistant ones. On the other hand, piperacillin only susceptible strains were 59.4% and resistant ones in 40.6%. Great differences in susceptibility to examined antimicrobial agents were observed in Enterobacteriaceae family and Staphylococcus (MSS) genus. There were no differences in susceptibility to piperacillin and tazobactam and piperacillin alone in anaerobic Enterobacteriaceae strains and non-fermenting Gram-negative bacilli.

Bishara J. et al. *Five-year prospective study of bacteraemic urinary tract infection in a single institution.* Eur J Clin Microbiol Infect Dis. 1997; 16(8) : 563-7.p Abstract: In order to determine the epidemiology, microbiology, and outcome of bacteraemia originating in the urinary tract in hospitalised patients, a prospective study was conducted in a large general hospital in Israel. Data from all patients with bacteraemia were collected prospectively, and a subgroup of patients with bacteraemia secondary to urinary tract infection was analysed. There were 702 episodes of bacteraemia secondary to urinary tract infection during a five-year period (33.9% of all episodes of bacteraemia). The mean age of the patients was 76 years, and the male:female ratio was 0.9:1.0. The most common pathogens were Escherichia coli (52%), Klebsiella spp. (14%), and Proteus spp. (9%). Pseudomonas spp. were isolated from 8% of all patients, from 19% of those who had received antibiotics, and from 15% of males. Enterococcus spp. were isolated from 4% of males but from no females. Five percent of the episodes were polymicrobial, and 16% of the infections were hospital acquired. On logistic multivariate regression analysis, predictors of mortality were: hospitalisation in a medical department, hospital-acquired infection, inappropriate empiric antibiotic treatment, presence of decubitus ulcer(s), respiratory or renal failure, and elevated urea and decreased albumin levels.

Bivins M.H. et al. *Position-dependent ventricular tachycardia related to a peripherally inserted central catheter.* Mayo Clin Proc. 2000; 75(4) : 414-6.p Abstract: Recently, peripherally inserted central venous catheters (PICCs) have been widely used for venous access. Advantages of a PICC over centrally inserted central catheters include the virtual elimination of the risk of pneumothorax, hemothorax, and arterial puncture, along with a reduced risk of bleeding. However, the PICC has associated risks. We present 2 cases of body position-dependent ventricular tachycardia related to PICCs. These events occurred in patients with no prior history of cardiac arrhythmia and were corrected by repositioning of the PICC. They serve to identify a potentially serious cardiac complication of the PICC that, to our knowledge, has not been described previously.

Bjarnason S. et al. *Caries risk assessment in adolescents.* Swed Dent J. 1997; 21(1-2) : 41-8.p Abstract: Detailed caries records and salivary microbiological tests were utilized to predict caries development in a group of 15-16-year-old Swedish adolescents. Both, caries experience and salivary microorganisms, correlated significantly with a subsequent 3-year increment of DFS. The strongest associations were recorded between the prevalence of baseline incipient lesions and the development of manifest caries ($r = 0.51$). Incipient lesions accounted for 27% of the 31% variability in the DFS increment explained by joined caries and salivary data. All predictors analysed showed insufficient sensitivity for identifying true caries active individuals. However, the combined sensitivity and specificity for incipient lesions and comprehensive caries record (incipient + manifest lesions) attained values allowing to predict caries development in the majority of individuals. Using precavity lesions as a sole predictor, 79-81% of the individuals were correctly classified with regard to their future caries levels. The addition of manifest caries increased the accuracy of classification to 86-89% depending on the stringency of screening and validation criteria.

Bjorkholm B. et al. *Helicobacter pylori entry into human gastric epithelial cells: A potential determinant of virulence, persistence, and treatment failures.* Helicobacter. 2000; 5(3) : 148-54.p Abstract: BACKGROUND AND OBJECTIVES: Intracellular location of Helicobacter pylori in human gastric epithelial cells has been observed in biopsies. Whether this reflects an ability to invade host cells and establish an intracellular niche remains to be determined. METHODS: The interactions between a clinical isolate of H. pylori and primary cell cultures from human gastric epithelium or the human epithelial cell line HEp-2 were monitored using time-lapse photography. This technique allows studies of the dynamics of host-microbial interactions. RESULTS: H. pylori cells readily approached and established close contacts with epithelial cells followed by uptake of the bacteria into the cellular cytoplasm. Entry into epithelial cells was achieved through an active process of bacterial motility and penetration of the cell membranes. In conventional invasion assays using HEp-2 cells, an increased internalization in a strain producing the vacuolating cytotoxin was observed, compared to the isogenic VacA knockout mutant. CONCLUSION: Invasion of gastric epithelium represents a hitherto unappreciated trait of H. pylori that could contribute to the bacterium's ability to establish persistent infection that evades the mucosal immune defense and sometimes also antimicrobial therapy. A small number of bacterial cells with a transient intracellular habitat could serve as a seeder population, providing a backup for a constantly challenged and fluctuating luminal population.

Bjorndal L. et al. *A clinical and microbiological study of deep carious lesions during stepwise excavation using long treatment intervals.* Caries Res. 1997; 31(6) : 411-7.p Abstract: Concern about the survival of microorganisms in deep carious lesions may often lead to unnecessary exposure of the pulp during final excavation. There are reasons, therefore, to initiate systematic studies on the alternative procedure known as stepwise excavation. Clinical evaluation of stepwise excavation was performed on 31 deep carious lesions considered to result in pulp perforation by traditional excavation. This study examines the clinical and microbiological alterations during the final excavation performed during long intervals (6-12 months) after the initial treatment that included peripheral dentine excavation and removal

of the central cariogenic biomass and the superficial necrotic dentine. The dentine colour and consistency were assessed by means of standardized scales before application of a Ca(OH)2 compound and a temporary sealing for 6-12 months. Reassessments were performed before the after final excavation. Microbiological dentine samples were obtained in 19 randomly selected lesions by a sterile bur, transferred to and diluted in reduced transport fluid, and plated on tryptic soy agar. After anaerobic incubation at 37 degrees C for 7 days, total colony-forming units per millilitre were counted from (1) peripheral excavated and hard dentine (control), (2) central demineralized dentine before and final excavation, and (3) central dentine after the final excavation. Six samples of central demineralized dentine were without any cultivable flora increasing to 9 samples after the final excavation. The clinical dentine changes occurring during stepwise excavation were characterized by enhanced hardness of the dentine which was associated with a marked reduction in bacterial growth after the final excavation. Despite the presence of bacteria in the excavated dentine none of the carious lesions resulted in pulp perforation, suggesting that the initial removal of the cariogenic biomass appears to be essential for control of caries progression. Stepwise excavation is not only an appropriate treatment of deep carious lesions but is also considered a suitable model for microbiological studies to determine the bacteria persisting in clinically excavated lesions.

Black-Schaffer R.M. et al. *Stroke rehabilitation. 2. Co-morbidities and complications.* Arch Phys Med Rehabil. 1999; 80(5 Suppl 1) : S8-16.p Abstract: This self-directed learning module highlights new advances in the understanding of co-morbid conditions and medical complications of stroke. It is part of the chapter on stroke rehabilitation in the Self-Directed Physiatric Education Program for practitioners and trainees in physical medicine and rehabilitation. This article covers co-morbid conditions of stroke patients, including cardiovascular disease, diabetes, and sleep apnea. It reviews recent information on complications of stroke, including deep venous thrombosis, dysphagia and aspiration, hospital-acquired infections, depression, falls, spasticity, shoulder pain, and seizures. Treatment advances in diabetes, depression, and spasticity are highlighted. Recent information is presented regarding exercise guidelines for the stroke patient with cardiovascular disease, the relationship between stroke and sleep apnea, prophylaxis of deep venous thrombosis, the changing spectrum of hospital-acquired infections, malnutrition in stroke patients, the problem of falls during rehabilitation, the evaluation and management of poststroke shoulder pain, and the risk of seizures after stroke.

Blakeley J.A. et al. *Parent satisfaction with education, support, and decision-making regarding their children's central venous access devices.* Can Oncol Nurs J. 2000; 10(1) : 8-13.p Abstract: This descriptive, exploratory study assessed parents' satisfaction with the education and support they received before and after their children had central venous access devices (CVADs) inserted for cancer treatment. Decisions regarding the type of CVAD and parent satisfaction with that choice were also evaluated. Parents of children who experienced a CVAD during the six-year period 1992-1997 participated. Data were collected through telephone interviews using a questionnaire specifically designed for the purposes of the study. Results suggest that parents were satisfied with the teaching and support received both prior to and following CVAD insertion. Other findings reveal that not all parents take part in decisions about the type of device used, and that if given a choice, based on their experience, they would likely choose implanted ports over Hickman catheters.

Blam M.E. et al. *Extended-interval dosing of aminoglycosides.* Mt Sinai J Med. 1997; 64(6) : 386-91.p Abstract: Aminoglycosides are efficacious agents. Their use has declined partly because of the development of newer, presumably less toxic agents. Research shows that aminoglycosides can be dosed differently than in the past, maintaining efficacy while reducing aminoglycoside toxicities. Aminoglycosides administered with newer agents may help overcome antibiotic bacterial resistance and thus yield safe and more effective therapy. This study focused on the efficacy and safety of the aminoglycosides extended-interval dosing regimen and was conducted by a search of the literature. Data from The Mount Sinai Hospital regarding bacterial resistance patterns were collected. A nomogram describing the administration of the extended-interval dosing regimen is provided. Extended-interval dosing of aminoglycosides is as efficacious as administering these agents every 8 hours and may result in lower rates of toxicities. Extended-interval dosing also may cost less and be easier to administer. Aminoglycosides are less susceptible to bacterial resistance than many of the newer, currently favored antibiotics. Increasing the usage of aminoglycosides is likely to be safe and beneficial in the treatment of certain bacterial infections.

Bland L.A. et al. *Potency of endotoxin from bicarbonate dialysate compared with endotoxins from Escherichia coli and Shigella flexneri.* J Am Soc Nephrol. 1995; 5(8) : 1634-7.p Abstract: Endotoxin is a potent activator of the complement system and other host immunoregulators, including the cytokines, tumor necrosis factor alpha, interleukin-1 beta, and interleukin-6. In this study, the potency of an endotoxin from bicarbonate dialysate was compared with endotoxins from two enteric microorganisms, Shigella flexneri and Escherichia coli. Endotoxin concentrations were standardized for the three endotoxins by use of the Limulus amebocyte lysate turbidimetric assay. Endotoxin potency was assessed by the comparative plasma concentrations of tumor necrosis factor alpha, interleukin-1 beta, and interleukin-6 after an in vitro whole-blood challenge by each type of endotoxin. Blood collected from 10 hemodialysis patients was spiked with 0.1, 1, and 10 ng/mL of E. coli and Shigella endotoxin and with 1 and 10 ng/mL of bicarbonate dialysate endotoxin. After incubation, plasma was separated and frozen at -70 degrees C until assayed for cytokine concentrations. Dialysate endotoxin was found to be 10 to 100 times less potent than E. coli and Shigella endotoxins. It was concluded that there are significant differences in the potency of endotoxins from different strains of bacteria and that these differences should be noted when designing or evaluating studies on the clinical effects of endotoxins in hemodialysis settings.

Block S.L. et al. *Penicillin-resistant Streptococcus pneumoniae in acute otitis media: risk factors, susceptibility patterns and antimicrobial management.* Pediatr Infect Dis J. 1995; 14(9) : 751-9.p Abstract: From January, 1992, to January, 1994, penicillin-resistant (minimal inhibition concentration (MIC) > 0.06 microgram/ml) Streptococcus pneumoniae (PRSP) isolates accounted for 48 (17%) of 283 isolates from acute otitis media (AOM) or recurrent AOM in 246 ambulatory patients in rural Kentucky. By broth microdilution, relatively penicillin-resistant (MIC > 0.06 to 1.0 microgram/ml) and highly penicillin-resistant (MIC > or = 2.0 micrograms/ml) strains were detected in 25 (16%) and 23 (15%), respectively, of 157 pneumococcal middle ear isolates. Using 1994 National Committee for Clinical Laboratory Standards breakpoints for pneumococci (unavailable for oral cephalosporins except cefuroxime), highly PRSP strains were almost uniformly susceptible to clindamycin and vancomycin. In contrast highly PRSP strains were resistant to most oral antimicrobials customarily used for AOM with one-third of strains highly resistant (MIC > or = 2.0 micrograms/ml) to ceftriaxone. Serotypes 6B, 19F and 23F accounted for 95% of highly PRSP strains and serotype 9V for 48% of relatively PRSP strains. By multivariate analysis, otitis-prone condition (P = 0.0008) and number of antibiotic courses before day of culture (P < 0.0001) were independently predictive of PRSP. Highly PRSP isolates were more commonly isolated from patients recently treated within 3 days (30%) vs. those who completed therapy more than 3 days earlier (2%) (P < 0.0001).(ABSTRACT TRUNCATED AT 250 WORDS).

Blondeau J.M. *Expanded activity and utility of the new fluoroquinolones: a review.* Clin Ther. 1999; 21(1) : 3-40; discussion 1-2.p Abstract: In

general, the fluoroquinolones developed over the past few years have greater potency, a broader spectrum of antimicrobial activity, greater in vitro efficacy against resistant organisms, and a better safety profile than other antimicrobial agents, including the older quinolones. The present review focuses on 4 new quinolones that are commercially available (levofloxacin, trovafloxacin, grepafloxacin, and sparfloxacin) and 3 that are currently undergoing clinical trials (gatifloxacin, moxifloxacin, and clinafloxacin). Examination of the minimum inhibitory concentrations of these drugs against gram-positive, gram-negative, anaerobic, and atypical organisms demonstrates their increased potency in vitro. The available clinical evidence, although sparse, suggests the potential enhanced efficacy of these drugs in the treatment of various community-acquired and nosocomial infections (eg, respiratory, urinary tract, and skin infections and sexually transmitted diseases). Compared with ciprofloxacin, their pharmacokinetic profiles demonstrate equivalent or greater bioavailability, higher plasma concentrations, and increased tissue penetration, as reflected in greater volume of distribution. Adverse events seen with most quinolones are mild. Serious adverse effects that may occur are phototoxicity (particularly with sparfloxacin) and prolongation of the QTc interval (seen with sparfloxacin and grepafloxacin). Drug interactions are possible between multivalent cation-containing compounds and all quinolones and between theophylline and both ciprofloxacin and grepafloxacin. Drugs that prolong the QTc interval should not be coadministered with sparfloxacin and grepafloxacin. Step-down therapy, a therapeutic and cost-saving advantage possible with gatifloxacin, levofloxacin, and moxifloxacin, allows the switching of patients from intravenous to oral therapy without having to change the dosage regimen or class of antibiotics. In addition to shortening the hospital stay and reducing the risk of venous complications, step-down therapy has been shown to cut hospital drug costs by 40% and hospitalization costs by 20%.

Blondeau J.M. *A review of the comparative in-vitro activities of 12 antimicrobial agents, with a focus on five new respiratory quinolones'*. J Antimicrob Chemother. 1999; 43 Suppl B : 1-11.p Abstract: The efficacies of many antimicrobial agents are being threatened by a global increase in the numbers of resistant bacterial pathogens—microorganisms that were once susceptible to some of these agents. In particular, antimicrobial resistance amongst strains of Haemophilus influenzae, Moraxella catarrhalis and Streptococcus pneumoniae has limited the usefulness of first-line agents in some clinical settings. Quinolones were introduced in the 1980s and represented a significant therapeutic advancement in the treatment of patients with infectious diseases. While these compounds possessed potent in-vitro activities against a wide range of gram-negative pathogens, their activities against some gram-positive and 'atypical' pathogens remained borderline. Further advancement in the development of quinolones has overcome some of these problems. The 'respiratory quinolones' represent a new generation within this class of molecules and comprise compounds possessing broad spectrum activities against gram-negative, gram-positive and atypical pathogens. This review will focus on the in-vitro activities of five new respiratory quinolones (gatifloxacin, grepafloxacin, levofloxacin, moxifloxacin and trovafloxacin), ciprofloxacin and six non-quinolone agents (azithromycin, clarithromycin, amoxycillin, co-amoxiclav, cefuroxime and co-trimoxazole) against a range of bacterial and atypical pathogens, including those that are now resistant to several of these compounds.

Blondeau J.M. et al. *In vitro evaluation of G1: a novel antimicrobial compound*. Int J Antimicrob Agents. 1999; 11(2) : 163-6.p Abstract: G1 (1-[5-bromofur-2-il]-2-bromo-2-nitroethene) is a novel antimicrobial compound developed in Cuba with reported broadspectrum activity against Gram-positive and -negative bacteria, yeasts and fungi. A compound of this nature may have considerable therapeutic potential. We tested the in vitro activity of this novel compound against 3595 organisms using microbroth dilution. The following are MIC50, MIC90 and range respectively for some of the microorganisms tested: E. coli 16, 16, 4 32; Klebsiella sp. 16, 16, 8 32; Citrobacter sp. 16, 16, 8 16; Enterobacter sp. 16, 16, 8-16; Proteus sp. 16, 16, 8-16; Coagulase-negative staphylococci 16, 32, 4-32; Enterococcus sp. 16, 32, 2-32; Staphylococcus aureus 8, 16, 4-16; Streptococcus agalactiae 4, 8, 4 8; Streptococcus pyogenes 4, 8, 0.25-16; Candida albicans 2, 2, 1-4; Candida tropicalis 4, 4, 2-4; Candida sp. 2,4, 1-4. MIC values appear lower for Gram-positive microorganisms and yeasts. G1 appears to be a novel antimicrobial agent with broad spectrum activity against bacterial and fungal pathogens. Defining the activity of this compound against multi-resistant bacteria is a priority.

Blondeau J.M. et al. *In vitro activity of several antimicrobial agents against 1003 isolates of Streptococcus pyogenes collected from Western Canada*. Int J Antimicrob Agents. 1999; 12(1) : 67-70.p Abstract: Streptococcus pyogenes is a common pathogen which may be associated with significant morbidity and mortality. Recent information is not readily available, in Canada, regarding the susceptibility of clinical isolates to penicillin, extended spectrum and/or newer agents. We collected and tested 1003 isolates of S. pyogenes to seven antimicrobial agents and found the following susceptibility rates: azithromycin 97%, ceftriaxone 100%, ciprofloxacin 99.4%, clarithromycin 98.5%, clindamycin 99.9%, erythromycin 96.5% and penicillin 100%. These results indicate that antimicrobial resistance is not yet a problem of S. pyogenes in Canada.

Blondeau J.M. et al. *Canadian Pseudomonas aeruginosa susceptibility study from 48 medical centers: focus on ciprofloxacin*. Int J Antimicrob Agents. 1998; 10(4) : 297-302.p Abstract: We tested 1503 clinical isolates of Pseudomonas aeruginosa, from 48 Canadian medical centers, against ciprofloxacin and 11 other antimicrobial agents to determine in vitro activity. The frequency of susceptibility was highest for carbenicillin and ticarcillin (91% each) followed by imipenem and ceftazadime (90% each). Overall susceptibility (< or = 1.0 mg/l) to ciprofloxacin was 84% while resistance (> or = 4.0 mg/l) was 12%. Ciprofloxacin resistant isolates were more common from urinary tract specimens than from specimens collected from the respiratory and/or skin and soft tissue. Isolates from cystic fibrosis patients were more resistant to all agents tested than isolates from non-cystic fibrosis patients.

Blondeau J.M. et al. *Formula to help select rational antimicrobial therapy (FRAT): its application to community- and hospital-acquired urinary tract infections.* Int J Antimicrob Agents. 1999; 12(2) : 145-50.p Abstract: The selection of antimicrobial agents is guided by the use of formularies which often constrain prescribing options. There are several factors which influence the inclusion of specific agents. Two of the most important factors are microbial etiology of a disease and the incidence of antibiotic resistance. Various surveillance programs have highlighted the regional differences in antimicrobial susceptibility/resistance among various pathogens. This simple formula enables individual physicians, pharmacy and therapeutic committees and managed care formulary managers to harness local etiology and susceptibility information. In this paper the formula is applied to community- and hospital-acquired urinary tract infections.

Blondeau J.M. et al. *In vitro activity of 19 antimicrobial agents against 3513 nosocomial pathogens collected from 48 Canadian medical centres. The Canadian Antimicrobial Study Group.* Int J Antimicrob Agents. 2000; 15(3) : 213-9.p Abstract: Antimicrobial resistance is a global concern. Differentiation between susceptibility rates for nosocomial versus community pathogens is important epidemiologically because it impacts on the appropriate empirical selection of antimicrobial therapy for infected patients. We studied resistance rates for 3513 nosocomial pathogens from 48 Canadian medical centres tested against 19 antimicrobial agents. The following are percent susceptibility for ceftazidime, ceftriaxone, ciprofloxacin, imipenem, netilmicin, and ticarcillin/clavulanic acid, respectively: Enterobacteriaceae 95, 95, 97,

99 98, 89; Escherichia coli, all 99 except ticacillin/clavulanic acid (91); Enterobacter spp. 78, 78, 96, 99, 99, 71; Citrobacter spp. 79, 80, 89, 100, 94, 73; Proteus spp. 99, 88, 99, 88, 99, 98; Pseudomonas aeruginosa 88, 20, 82, 88, 81, 36; Staphylococcus aureus, all > 95; Enterococcus spp. 4, 9, 62, 95, 43, 38. Susceptibility rates for other species of microorganisms and agents tested varied considerably. Some institutions had higher than average resistance rates for some pathogens (i.e. P. aeruginosa) and some agents. Detection and continued surveillance of antimicrobial resistance amongst nosocomial pathogens is vital to patient care and health care resources. The control of antimicrobial resistance can help maintain antibiotic usage and costs associated with the use of ever more potent drugs and the treatment of increasingly resistant infections.

Blondeau J.M. et al. *Canadian ciprofloxacin susceptibility study: comparative study from 15 medical centers. Canadian Ciprofloxacin Study Group.* Antimicrob Agents Chemother. 1996; 40(7) : 1729-32.p Abstract: We tested 4,507 microorganisms, from 15 Canadian medical centers, against ciprofloxacin and several other antimicrobial agents to determine the in vitro susceptibilities. Overall, susceptibility of members of the family Enterobacteriaceae to ciprofloxacin was 97%; Moraxella and Haemophilus spp. had susceptibilities of 98 and 99%, respectively; and P. aeruginosa and S. aureus had susceptibilities of 79 and 96%, respectively.

Blondeau J.M. et al. *Canadian Multicenter Susceptibility Study, with a focus on cephalosporins, from 15 Canadian medical centers. The Canadian Multicenter Study Group.* Antimicrob Agents Chemother. 1997; 41(12) : 2773-5.p Abstract: We have previously reported on the in vitro susceptibilities of 4,482 microorganisms to 10 antimicrobial agents tested as part of a Canadian multicenter study. We now report on the remaining 10 agents tested in that study. Of the cephalosporins reported here, ceftriaxone had the greatest activity (82 to 100% susceptible isolates) against Enterobacteriaceae, compared to ceftizoxime (78 to 100%) and cefoperazone (78 to 100%). Cefoperazone activity against Pseudomonas aeruginosa was 87%, compared to 92% for ticarcillin-clavulanate. All agents had 97% or greater activity against Staphylococcus aureus.

Blumer J.L. *Pharmacokinetics and pharmacodynamics of new and old antimicrobial agents for acute otitis media.* Pediatr Infect Dis J. 1998; 17(11) : 1070-5; discussion 1099-100.p Abstract: Selection of appropriate antibiotic treatment for children with acute otitis media (AOM) is challenging. Although the diagnosis is relatively easy for experienced clinicians, the distinction between AOM and otitis media with effusion is often more subtle. In general therapy is empiric and the pathogen causing disease in a given patient remains unknown. However, this situation is made even more difficult by the dynamic nature of the pathogenesis of AOM. Both the proportion of patients infected with one of the three primary pathogens, Streptococcus pneumoniae, Haemophilus influenzae and Moraxella catarrhalis, and the antimicrobial susceptibility patterns of these pathogens are changing. Currently there are 16 antibiotics labeled for use in AOM. Only 2 are reliably effective against penicillin-resistant pneumococcus: high dose amoxicillin (80 to 100 mg/kg/day) and im ceftriaxone. Among the others all are beta-lactamase-stable and have proven clinical effectiveness in AOM patients infected with H. influenzae or M. catarrhalis. Even with the high spontaneous resolution rate reported for AOM, antimicrobial therapy remains the standard of care in the United States. Recognition of the fundamental determinants of effective therapy should permit rational antibiotic selection for each patient.

Bochkov I.A. et al. *[The comparative characteristics of the vaginal microflora in parturient women who are carriers of Streptococcus serogroup B and in those who are free of carriage].* Zh Mikrobiol Epidemiol Immunobiol. 1995; (5) : 89-92.p Abstract: In the study of vaginal microflora in parturient women, carriers of group B streptococci (GBS), and those free of carriership a wide range of microorganisms, represented by aerobic and anaerobic species with the prevalence of lactobacteria in both groups of women, was isolated. The composition of vaginal microflora in parturient women did not depend on the presence of GBS in this biotope or on the level of colonization by lactobacteria. The colonization resistance (CR) of the vaginal mucosa had essential influence of the level of carriership with respect to GBS and a number of representatives of the symbiotic microflora of this locus. In the majority of cases GBS were isolated from parturient women with low CR.

Bochkov I.A. et al. *[Peculiarities of cosmonauts fauces flora].* Aviakosm Ekolog Med. 1998; 32(4) : 25-8.p Abstract: In the course of the work done the specific and quantitative composition of the streptococcal autoflora of the fauces of the cosmonauts and the members of backup drew was investigated. In populations of isolated microorganisms the non-pathogenic streptococci have dominated among which S. salivarius prevailed. The same species has constantly been isolated in all the cosmonauts, pre- and postflight. Observation of the microflora state of the fauces at different stages of their professional activity made it possible to reveal the peculiarities of an individual dynamics in the number of nonpathogenic streptococci isolated from tampon depending on the participation of the test-subjects in the previous space missions. This is evidently a reflection of the effect of psychoemotional tension on the state of colonization resistance (CR) of the fauces mucosa and, as result of this, on its microflora. In turn, the occurrence of the individual species of conditionally-pathogenic streptococci after the mission points to a decrease in the CR under effect of unfavourable factors of space mission.

Bodnar B.M. *[Characteristics of peritoneal exudate microflora in children with appendicular peritonitis].* Klin Khir. 1997; (11-12) : 64.p Abstract: Bacteriological investigation of peritoneal exudate was conducted in 131 children with peritonitis. The greatest quantity of pathogenic and conventionally pathogenic Escherichias and bacteroids was revealed in March, April and September. In summer peritonitis was caused by pathogenic and conventionally pathogenic Escherichias in association with enterobacterias, staphylococci and other microorganisms.

Bodner L.J. et al. *Peripheral venous access ports: outcomes analysis in 109 patients.* Cardiovasc Intervent Radiol. 2000; 23(3) : 187-93.p Abstract: PURPOSE: To perform a retrospective outcomes analysis of central venous catheters with peripheral venous access ports, with comparison to published data. METHODS: One hundred and twelve central venous catheters with peripherally placed access ports were placed under sonographic guidance in 109 patients over a 4-year period. Ports were placed for the administration of chemotherapy, hyperalimentation, long-term antibiotic therapy, gamma-globulin therapy, and frequent blood sampling. A vein in the upper arm was accessed in each case and the catheter was passed to the superior vena cava or right atrium. Povidone iodine skin preparation was used in the first 65 port insertions. A combination of Iodophor solution and povidone iodine solution was used in the last 47 port insertions. Forty patients received low-dose (1 mg) warfarin sodium beginning the day after port insertion. Three patients received higher doses of warfarin sodium for preexistent venous thrombosis. Catheter performance and complications were assessed and compared with published data. RESULTS: Access into the basilic or brachial veins was obtained in all cases. Ports remained functional for a total of 28,936 patient days. The port functioned in 50% of patients until completion of therapy, or the patient's expiration. Ports were removed prior to completion of therapy in 18% of patients. Eleven patients (9.9% of ports placed) suffered an infectious complication (0.38 per thousand catheter-days)-in nine, at the port implantation site, in two along the catheter. In all 11 instances the port was removed. Port pocket infection in the early postoperative period occurred in three patients (4.7%) receiving a Betadine prep vs two patients (4.2%) receiving a standard O.R. prep. This difference was not statistically significant ($p = 0.9$). Venous thrombosis occurred in three patients (6.8%) receiving warfarin sodi-

um and in two patients (3%) not receiving warfarin sodium. This difference was not statistically significant ($p = 0.6$). Aspiration occlusion occurred in 13 patients (11.7%). Intracatheter urokinase was infused in eight of these patients and successfully restored catheter function in all but two instances. These complication rates are comparable to or better than those reported with chest ports. CONCLUSION: Peripheral ports for long-term central venous access placed by interventional radiologists in the interventional radiology suite are as safe and as effective as chest ports.

Boelens J.J. et al. *Subcutaneous abscess formation around catheters induced by viable and nonviable Staphylococcus epidermidis as well as by small amounts of bacterial cell wall components.* J Biomed Mater Res. 2000; 50(4) : 546-56.p Abstract: The use of catheters is often complicated by infection, mainly due to Staphylococcus epidermidis. Recently, a novel poly(vinylpyrrolidone)-grafted silicone elastomer catheter (SEpvp) was introduced. Less bacteria adhered to SEpvp than to conventional SE catheters in vitro. The frequency of S. epidermidis infection associated with SEpvp and SE was assessed in a rabbit model. Unexpectedly, abscesses were induced by the injection of low numbers of S. epidermidis along subcutaneously inserted SEpvp. No abscesses were seen around SE, even when very high numbers of S. epidermidis were injected. This bioincompatibility reaction observed around the SEpvp was independent of the host, bacterial strain, and method of inoculation. Abscesses were also induced by nonviable S. epidermidis and by bacterial cell wall components. Because these incompatibility reactions were not observed in the absence of bacteria, biocompatibility testing should include experiments in which the inflammatory effects of the combination of catheter and (non)viable bacteria are tested. Copyright 2000 John Wiley & Sons, Inc.

Bogaerts J. et al. *Auxotypes, serovars, and trends of antimicrobial resistance of Neisseria gonorrhoeae in Kigali, Rwanda (1985-93).* Sex Transm Infect. 1998; 74(3) : 205-9.p Abstract: OBJECTIVE: To investigate the in vitro antimicrobial susceptibility and the auxotype/serovar distribution of Neisseria gonorrhoeae in Kigali, Rwanda, during 1985-93. METHODS: As part of a monitoring programme the in vitro susceptibility of 1604 isolates of N gonorrhoeae was determined by agar dilution. Auxo- and serotyping was performed on 1350 and 1313 isolates respectively. RESULTS: The prevalence of penicillinase producing N gonorrhoeae (PPNG) remained stable at a rate of 39% during 1985-91 and increased to 61% in 1992-3. Chromosomal resistance to penicillin was common among non-PPNG and resistance to thiamphenicol and tetracycline was common among both PPNG and non-PPNG. High level, plasmid mediated resistance to tetracycline (TRNG) was observed for the first time at the end of 1989 and increased from 2% of the isolates in 1990 to 50% by 1993. A trend for increasing resistance to norfloxacin and ofloxacin was observed during 1985-90 but disappeared in 1991-93. Five isolates with high level resistance to norfloxacin (MIC 2 mg/l) were observed in 1990. Resistance to trimethoprim-sulphamethoxazole (TMP-SMZ) emerged at the end of 1990 and was observed among 10% of the isolates during 1991-3. All strains remained susceptible to ofloxacin, ciprofloxacin, spectinomycin, and ceftriaxone. Overall, 75% of the isolates were prototrophic or required proline for their growth and 62% belonged to serovars IA-6 and IB-1. The prevalence of serovar IB-4 increased strongly during the last 3 years of the study. CONCLUSION: Resistance to penicillin, thiamphenicol, and tetracycline was common in N gonorrhoeae during 1985-1993. The rapid spread of TRNG after 1989 and the steep increase of PPNG during 1992-3 were the most striking facts of the study period. The auxotype and serovar distribution was comparable with findings from other African countries.

Bogaerts J. et al. *Antimicrobial resistance and serotypes of Shigella isolates in Kigali, Rwanda (1983 to 1993): increasing frequency of multiple resistance.* Diagn Microbiol Infect Dis. 1997; 28(4) : 165-71.p Abstract: The serotype distribution and susceptibility to nine antibiotics was determined for 2491 Shigella isolates cultured in the medical laboratory of the Centre Hospitalier de Kigali, Rwanda, during 1983 to 1993. Overall, Shigella flexneri was the most frequent species, ranking before Shigella sonnei, Shigella boydii, and Shigella dysenteriae. However, the relative frequency of the different Shigella spp. showed an important variability over time. S flexneri increased from 40% in 1983 to 68% of the isolates in 1993 whereas S. dysenteriae Type 1 decreased gradually from 30 to 0.5% of the isolates in 1992. After the outbreak of severe civil unrest, which caused the displacement of many people to the capital, a new epidemic of dysentery started in the Kigali area and S. dysenteriae Type 1 accounted again for 24% of the isolates in 1993. In 1983, resistance to tetracycline, streptomycin, and sulfonamides was common among the endemic Shigella spp. Resistance to chloramphenicol was observed in 17% (30/182) of the isolates. Only 10% were resistant to ampicillin and an equal proportion to trimethoprim, whereas 5% of the isolates showed resistance to both products. By 1993, 66% (195/295) of the isolates were resistant to chloramphenicol (for comparison with 1983, $p < 0.001$), 70% (207/295) to ampicillin ($p < 0.001$), 67% to trimethoprim ($p < 0.001$), and 58% had combined resistance to the latter two drugs ($p < 0.001$). Resistance patterns differed strongly by species, S. flexneri being more frequently resistant than S. sonnei. In 1983, all S. dysenteriae Type 1 isolates were resistant to ampicillin, chloramphenicol, tetracycline, and sulfonamides. Trimethoprim resistance increased from 31% (25/80) in 1983 to 96% (26/27) of the isolates in 1986 ($p < 0.001$). After the introduction of nalidixic acid as an alternative for trimethoprim-sulfamethoxazole, trimethoprim resistance decreased to 87%, during 1987 to 1992, and subsequently to 68% of the isolates in 1993. However, 20% of the isolates became resistant to nalidixic acid in 1993. Ampicillin and trimethoprim-sulfamethoxazole are no longer useful for the empirical treatment of shigellosis in Rwanda.

Bogush M.L. et al. *Identification and localization of differences between Escherichia coli and Salmonella typhimurium genomes by suppressive subtractive hybridization.* Mol Gen Genet. 1999; 262(4-5) : 721-9.p Abstract: The availability of bacterial genome sequences raises an important new problem - how can one move from completely sequenced microorganisms as a reference to the hundreds and thousands of other strains or isolates of the same or related species that will not be sequenced in the near future? An efficient way to approach this task is the comparison of genomes by subtractive hybridization. Recently we developed a sensitive and reproducible subtraction procedure for comparison of bacterial genomes, based on the method of suppression subtractive hybridization (SSH). In this work we demonstrate the applicability of subtractive hybridization to the comparison of the related but markedly divergent bacterial species Escherichia coli and Salmonella typhimurium. Clone libraries representing sequence differences were obtained and, in the case of completely sequenced E. coli genome, the differences were directly placed in the genome map. About 60% of the differential clones identified by SSH were present in one of the genomes under comparison and absent from the other. Additional differences in most cases represent sequences that have diverged considerably in the course of evolution. Such an approach to comparative bacterial genomics can be applied both to studies of interspecies evolution - to elucidate the "strategies" that enable different genomes to fit their ecological niches - and to development of diagnostic probes for the rapid identification of pathogenic bacterial species.

Bohme A. et al. *[Antibiotic therapy in leukopenia].* Schweiz Rundsch Med Prax. 1998; 87(36) : 1120-5.p Abstract: Intensified chemotherapy-induced long-term neutropenia is the main cause for morbidity and mortality of patients with hematologic malignancies. The successful management of neutropenia is based on hygienic procedures antimicrobial prophylaxis and therapy, and diagnostics. Until today, Co-Trimoxazole or fluoroquinolenes and oral amphotericine B are the prophylactic standard. The initial therapy of febrile neutropenia has to be started empirically before identification of causative pathogens or infectious foci. The febrile episodes should be treated

with broad spectrum antibiotics (combinations or monotherapy) due to the spectrum of microorganisms or resistance situation at hospital. In case of non-response after 3-4 days the initial therapy should be modified, in addition to further antibacterial therapy the start with an antifungal drug has to be recommended. In patients with pulmonary infiltrates the early treatment with amphotericine B has been shown to be more advantageous than delayed antifungal therapy. Furthermore, the antibiotic therapy is based on proven microorganisms, susceptibility testing and infectious foci. The value of interventional treatment with G-CSF or GM-CSF is controversely discussed. An uncompromising handling of febrile neutropenia is necessary to reduce the mortality due to infections in patients with hematologic malignancies.

Bohnen J.M. *Antibiotic therapy for abdominal infection.* World J Surg. 1998; 22(2) : 152-7.p Abstract: Abdominal infections are treated by resuscitation, abdominal drainage, control of the source of infection, and antimicrobial agents. Ideally, antimicrobial therapy is active against expected pathogens, safe and effective in clinical trials, inexpensive, and unlikely to promote drug resistance. Numerous single-agent and combination-drug regimens have been efficacious in clinical trials, based on coverage of Escherichia coli and Bacteroides species, the predominant pathogens isolated. Whether expanded antimicrobial coverage is required, especially in hospital-acquired infections, is controversial. Candida infections should be treated with antifungal therapy in patients with recurrent abdominal infections, immunosuppressed patients, and those with candidal abscesses. Most agents have few serious adverse effects; aminoglycosides are the least expensive agents but cause nephro- and ototoxicity. There is little information on the promotion of drug resistance in this condition. Recent developments include the introduction of ticarcillin/clavulanic acid, ampicillin/ sulbactam, piperacillin/tazobactam, meropenem, aztreonam/clindamycin, and ciprofloxacin/metronidazole; success with once-daily aminoglycosides; evidence that antibiotics limit infectious complications of pancreatitis; controversy over the value of diagnostic cultures; the use of oral therapy; evidence in favor of shorter courses of treatment; and the introduction of pharmacoeconomic studies. Clinical investigators are challenged to improve drug trials by stratifying and controlling for the adequacy of surgical intervention.

Bohte R. et al. *Aetiology of community-acquired pneumonia: a prospective study among adults requiring admission to hospital.* Thorax. 1995; 50(5) : 543-7.p Abstract: BACKGROUND—The prevalence of microorganisms causing community-acquired pneumonia in patients who required admission to hospital was investigated and the percentage of cases whose aetiology remained unknown due to the study design and logistical problems estimated. METHODS—Between January 1991 and April 1993 all patients with community-acquired pneumonia admitted to six hospitals were included in the study. Aetiological diagnosis, categorised as definite, probable and possible, was based on the results of routine microbiological and serological tests. RESULTS—Three hundred and thirty four patients with a median age of 65 (range 17-92) years were enrolled in the study. The diagnosis of community-acquired pneumonia was definite in 108 cases, and probable or possible in 73 and 27 cases, respectively, including dual infections. Streptococcus pneumoniae was the predominant pathogen (27%) followed by viruses and Haemophilus influenzae (both about 8%) and Mycoplasma pneumoniae (6%). Chlamydia spp (3%) and Legionella pneumophila (2%) were less frequently detected. No diagnosis was made in 45% of the cases. With adjustment for anti-microbial therapy before admission and for other logistical considerations, it is estimated that the aetiology could have been ascertained in 65% of the cases. CONCLUSIONS—Streptococcus pneumoniae is the most frequently detected cause of community-acquired pneumonia. The inability to detect a microorganism results mainly from the use of routine diagnostic tests and, to a lesser extent, from logistical problems or the use of antibiotics before admission.

Boixeda D. et al. *Spontaneous bacterial peritonitis. Clinical and microbiological study of 233 episodes.* J Clin Gastroenterol. 1996; 23(4) : 275-9.p Abstract: We made a retrospective study of 233 episodes of spontaneous bacterial peritonitis that were treated at our Service between January 1980 and September 1996 in order to analyze the clinical presentation, microbiological data, possible pathogenic factors, treatment, and evolution of this clinical entity. Ascites, abdominal pain, and fever were the most frequent symptoms. Only 3.43% of the episodes developed asymptomatically. Thirty-six episodes resulted in the patient's death (15.45%) and, of all the factors analyzed, only a prothrombin time of < 35%, bilirubin > 8 mg/dl, and serum creatinine > 2.1 mg/dl were statistically correlated with a higher death rate. The culture of the ascitic fluid gave a positive result in 47.6% of the cases, whereas no clinical differences were noticed between these patients and those with negative results. The most frequently isolated microorganisms turned out to be Gram negative (49.54%). A proportion of 71.24% of the episodes were treated with cephotaxime (i.v.), whereas 28.76% were treated with other drugs or pharmacological combinations. The death rate was much lower with cephotaxime (4.81% vs. 41.79%, $p < 0.01\%$).

Bollard C.M. et al. *The use of central venous catheters (portacaths) in children with haemophilia.* Haemophilia. 2000; 6(2) : 66-70.p Abstract: The experience with central venous implantable devices (portacaths) has been reviewed in children attending the Auckland Hospital Haemophilia Centre. Fourteen children had 23 portacaths inserted. Thirteen had severe Haemophilia A, of whom five had high responding inhibitors to factor VIII. All the children were HIV negative. Ages ranged from 4 months to 13 years at the time of initial placement and 12 were under 5 years. Indications for portacath placement included primary and secondary prophylaxis, induction of immune tolerance, prophylactic therapy post intracranial haemorrhage and poor venous access. Catheter-related infections occurred in 48% of cases. Staphylococcal species were the most common organisms isolated followed by gram-negative bacilli. 63% of the infections were successfully cleared with antibiotics. Haematoma formation occurred in 17% of catheters, primarily in patients who had high factor VIII inhibitor levels. Mechanical problems including blockage, leakage and extrusion of the portacath occurred less frequently (13%). The significant rate of infection in this immunocompetent population is consistent with other reports. Despite the obvious benefits of portacaths this complication is potentially serious and causes appreciable morbidity. In contrast, bleeding complication rates were relatively low.

Bollgren I. *Antibacterial prophylaxis in children with urinary tract infection.* Acta Paediatr Suppl. 1999; 88(431) : 48-52.p Abstract: The aim, in conservative management of vesico-ureteric reflux by antimicrobial prophylaxis, is to prevent recurrent febrile urinary tract infections and consequent renal scarring. However, the effects of this prophylactic strategy are difficult to evaluate, since the required studies comparing children on prophylaxis with controls (without prophylaxis but under careful supervision) are lacking. Furthermore, the optimal length of prophylaxis needs to be defined. Since risk of renal scarring is believed to occur more frequently in young people, and since recurrent urinary infections mainly affect girls, the age and sex of subjects are important in the design of a prophylactic regimen. Nitrofurantoin and trimethoprim are the most common agents used for long-term, low-dose antibacterial prophylaxis. Break-through infections still result from noncompliance and from development of bacterial resistance, the latter mainly arising with trimethoprim. Few studies of prophylactic drugs are available that adequately define patient materials and include a random allocation to the different agents. Further studies of the effects of alternative prophylactic agents are called for, preferably combined with fresh insight into the ecological impact on the bowel and periurethral floras.

Bolotin A. et al. *Low-redundancy sequencing of the entire Lactococcus lactis IL1403 genome.* Antonie Van Leeuwenhoek. 1999; 76(1-4) : 27-76.p

Abstract: Lactococcus lactis is an AT-rich gram positive bacterium phylogenetically close to the genus Streptococcus. Various strains of L. lactis are used in dairy industry as starters for cheese making. L. lactis is also one of the well characterized laboratory microorganisms, widely used for studies on physiology of lactic acid bacteria. We describe here a low redundancy sequence of the genome of the strain L. lactis IL1403. The strategy which we followed to determine the sequence consists of two main steps. First, a limited number of plasmids and lambda-phages that carry random segments of the genome were sequenced. Second, sequences of the inserts were used for production of novel sequencing templates by applying Multiplex Long Accurate PCR protocols. Using of these PCR products allowed to determine the sequence of the entire 2.35 Mb genome with a very low redundancy, close to 2. The error rate of the sequence is estimated to be below 1%. The correctness of the sequence assembly was confirmed by PCR amplification of the entire L. lactis IL1403 genome, using a set of 266 oligonucleotides. Anotation of the sequence was undertaken by using automatic gene prediction computer tools. This allowed to identify 1495 protein-encoding genes, to locate them on the genome map and to classify their functions on the basis of homology to known proteins. The function of about 700 genes expected to encode proteins that lack homologs in data bases cannot be reliably predicted in this way. The approach which we used eliminates high redundancy sequencing and mapping efforts, needed to obtain detailed and comprehensive genetic and physical maps of a bacterium. Availability of detailed genetic and physical maps of the L. lactis IL1403 genome provides many entries to study metabolism and physiology of bacteria from this group. The presence of 42 copies of five different IS elements in the IL1403 genome confirms the importance of these elements for genetic exchange in Lactococci. These include two previously unknown elements, present at seven and fifteen copies and designated IS1077 and IS983, respectively. Five potential or rudimentary prophages were identified in the genome by detecting clusters of phage-related genes. The metabolic and regulatory potential of L. lactis was evaluated by inspecting gene sets classified into different functional categories. L. lactis has the genetic potential to synthesise 20 standard amino acids, purine and pyrimidine nucleotides and at least four cofactors. Some of these metabolites, which are usually present in chemically defined media, can probably be omitted. About twenty compounds can be used by L. lactis as a sole carbon source. Some 83 regulators were revealed, indicating a regulatory potential close to that of Haemophilus influenzae, a bacterium with a similar genome size. Unexpectedly, L. lactis has a complete set of late competence genes, which may have concerted transcriptional regulation and unleadered polycistronic mRNAs. These findings open new possibilities for developing genetic tools, useful for studies of gene regulation in AT-rich gram positive bacteria and for engineering of new strains for the diary industry.

Bonacorsi S. et al. *[Multiresistant bacteria in pediatrics].* Pathol Biol (Paris). 1998; 46(4) : 261-7.p Abstract: Microorganisms that are resistant to multiple antimicrobial agents are of great concern to pediatric clinicians. Children infected with antibiotic-resistant bacteria are at risk to not respond to initial therapy. Nosocomial infection of pediatric patients with multidrug-resistant organisms are similar to those found in adults especially for Staphylococcus aureus, coagulase-negative staphylococci, vancomycin resistant Enterococcus and Enterobacteriaceae resistant to third-generation cephalosporin. However on the contrary to adult patients, multidrug-resistant bacteria are found in community infections with penicillin-resistant Streptococcus pneumoniae and P. aeruginosa in CF patients.

Bonadio M. et al. *Enterococcal glycopeptide resistance at an italian teaching hospital.* J Antimicrob Chemother. 2000; 46(1) : 129-31.p Abstract: Two thousand one hundred and thirteen strains of enterococci isolated at Pisa General Hospital in 1998 were analysed retrospectively to determine their glycopeptide resistance. Of all the microorganisms isolated in this period, 14.7% were enterococci (1405 ENTEROCOCCUS: faecalis, 19 ENTEROCOCCUS: faecium, six ENTEROCOCCUS: avium and 683 ENTEROCOCCUS: spp.). Two hundred and thirty (10.8%) of these enterococci were resistant or demonstrated reduced susceptibility to vancomycin and/or teicoplanin. The highest rate of resistance was found in outpatient enterococcal strains isolated from the urogenital tract. The frequency of enterococcal glycopeptide resistance at Pisa Hospital is higher than that reported from other areas of Italy.

Bonadonna L. et al. *Reduction of microorganisms in sewage effluent using hypochlorite and peracetic acid as disinfectants.* Cent Eur J Public Health. 1999; 7(3) : 130-2.p Abstract: A comparative study on peracetic acid and sodium hypochlorite in inactivating bacteria and viruses was carried out. Therefore the disinfection actions of peracetic acid, in comparison with sodium hypochlorite, was evaluated against the usual indicators of faecal contamination, the pathogen Salmonella, Pseudomonas spp., bacteriophages anti-Escherichia coli, F+/phage and the phage of Bactericides fragilis B40-8 and enteroviruses. Under the experimental conditions, no representative results were obtained for enteroviruses and phages because of their low concentration in the sewage effluent. On the other hand, the indicator organisms were reduced substantially by the sodium hypochlorite and peracetic acid concentrations, while more variable results were obtained against Pseudomonas and bacteriophages anti-Escherichia coli.

Bonang G. et al. *Influence of breastmilk on the development of resistance to intestinal colonization in infants born at the Atma Jaya Hospital, Jakarta.* Scand J Infect Dis. 2000; 32(2) : 189-96.p Abstract: A study of intestinal colonization resistance (CR) in breastfed versus formula-fed newborns at 4 intervals after birth in Jakarta, Indonesia, is described. To measure the intestinal CR for gram-negative enterobacilli, mean values of Enterobacteriaceae concentrations and mean numbers of Enterobacteriaceae biotypes were determined. The CR values found in this study show, that in all 4 sampling periods, at < 1, 2, 4 and 6 months, the mean concentration of Enterobacteriaceae was somewhat lower in the breastfed group than in the formula-fed group (only significant at 6 months). This means that the intestinal CR of the breastfed group may have been slightly higher than that in the formula-fed group. In both study groups, the CR was lower in the second and fourth month than soon after birth and at 6 months. For epidemiological reasons, comparison was performed of the Enterobacteriaceae biotypes found in samples from mother and child. The data show that, in the first sampling period, regardless of the theoretical possibility of a 'more intense (skin) contact' during breastfeeding (which might promote transfer of also microorganisms), the breastfed infants had a significantly lower percentage of identical Enterobacteriaceae biotypes than did the formula-fed group. This could possibly be ascribed to a higher CR in the breast-fed group. Determination of the concentration of Enterococcus species was found applicable to reproducibly measure the CR in the newborns at 6 months and in the mother-group.

Bonecini-Almeida M.G. *Flow cytometry as a tool to identify Mycobacterium tuberculosis interaction with the immune system and drug susceptibility.* Mem Inst Oswaldo Cruz. 2000; 95(4) : 491-4.p Abstract: Flow cytometric analysis is a useful and widely employed tool to identify immunological alterations caused by different microorganisms, including Mycobacterium tuberculosis. However, this tool can be used for several others analysis. We will discuss some applications for flow cytometry to the study of M. tuberculosis, mainly on cell surface antigens, mycobacterial secreted proteins, their interaction with the immune system using inflammatory cells recovered from peripheral blood, alveolar and pleura spaces and the influence of M. tuberculosis on apoptosis, and finally the rapid determination of drug susceptibility. All of these examples highlight the usefulness of flow cytometry in the study of M. tuberculosis infection.

Bonten M.J. et al. *The role of "colonization pressure" in the spread of van-*

comycin-resistant enterococci: an important infection control variable. Arch Intern Med. 1998; 158(10) : 1127-32.p Abstract: OBJECTIVE: The spread of nosocomial multiresistant microorganisms is affected by compliance with infection control measures and antibiotic use. We hypothesized that "colonization pressure" (ie, the proportion of other patients colonized) also is an important variable. We studied the effect of colonization pressure, compliance with infection control measures, antibiotic use, and other previously identified risk factors on acquisition of colonization with vancomycin-resistant enterococci (VRE). METHODS: Rectal colonization was studied daily for 19 weeks in 181 consecutive patients who were admitted to a single medical intensive care unit. A statistical model was created using a Cox proportional hazards regression model including length of stay in the medical intensive care unit until acquisition of VRE, colonization pressure, personnel compliance with infection control measures (hand washing and glove use), APACHE (Acute Physiology and Chronic Health Evaluation) 11 scores, and the proportion of days that a patient received vancomycin or third-generation cephalosporins, sucralfate, and enteral feeding. RESULTS: With survival until colonization with VRE as the end point, colonization pressure was the most important variable affecting acquisition of VRE (hazard ratio [HR], 1.032; 95% confidence interval [C1], 1.012-1.052; P=.002). In addition, enteral feeding was associated with acquisition of VRE (HR, 1.009; 95% CI, 1.000-1.017; P=.05), and there was a trend toward association of third-generation cephalosporin use with acquisition (HR, 1.007; 95% CI, 0.999-1.015; P=.11). The effects of enteral feeding and third-generation cephalosporin use were more important when colonization pressure was less than 50%. Once colonization pressure was 50% or higher, these other variables hardly affected acquisition of VRE. CONCLUSIONS: Acquisition of VRE was affected by colonization pressure, the use of antibiotics, and the use of enteral feeding. However, once colonization pressure was high, it became the major variable affecting acquisition of VRE.

Bonvehi J.S. et al. *Evaluation of gamma-irradiation in cocoa husk.* J Agric Food Chem. 2000; 48(6) : 2489-94.p Abstract: gamma-Irradiation was investigated as a technique to improve the hygienic quality of cocoa husk. Cocoa husk is a byproduct of cocoa bean processing industry. It contains approximately 57.5% (w/w) dietary fiber (nonstarch polysaccharides plus lignin), 15% (w/w) crude protein, 10.7% (w/w) mineral elements, 2.32% (w/w) cocoa butter, and 2.8% (w/w) carbohydrates (free sugars plus starch). The effect of irradiation on the growth rates of microorganisms are reported. Total counts, enterobacteriaceae, coliforms, Staphylococcus aureus, Streptococcus "D" of Lancefield, and yeast and mold counts before and after irradiation at 5, 8, and 10 kGy were determined. Cocoa husk was irradiated in open containers. An irradiation dose of 5 kGy was already sufficient to decrease the microbial counts to a very low level. No alteration in dietary fiber was measured in the irradiated product and no significant differences were detected between irradiated and nonirradiated cocoa husk.

Borek A.P. et al. *Evolving clinical problems with Streptococcus pneumoniae: increasing resistance to antimicrobial agents, and failure of traditional optochin identification in Chicago, Illinois, between 1993 and 1996.* Diagn Microbiol Infect Dis. 1997; 29(4) : 209-14.p Abstract: Infections due to multidrug-resistant pneumococci are a growing concern. Through December 1995, over 85% of isolates recovered from our patients in Chicago, Illinois, were fully susceptible to penicillin, and only a rare resistant strain was recovered from blood or cerebrospinal fluid (CSF). In December 1995, we began to observe bloodstream infections due to Streptococcus pneumoniae with penicillin MICs that represented either intermediate or full resistance to penicillin. S. pneumoniae isolated between January 1, 1993, and December 31, 1996, were tested against 11 different antimicrobial agents. There were 158 from blood or CSF, and 303 from other (primarily respiratory) sources. During 1996, 46% of our total S. pneumoniae isolates were no longer fully susceptible to penicillin, representing a threefold increase from the previous year's experience. In isolates from blood and CSF, more than 90% of strains had been fully susceptible to penicillin through 1995, but since the start of 1996, 29% of our invasive isolates were no longer fully susceptible to penicillin. During 1996, vancomycin was the only currently approved agent that was active against all recovered isolates. We also noted two isolates during 1996 where optochin testing did not accurately identify strains as S. pneumoniae. A major problem with multidrug-resistant S. pneumoniae causing both respiratory and invasive diseases appears to have now reached the Chicago area. Laboratories need to be aware of a continued increase in antimicrobial agent resistance exhibited by this pathogen, as well as potential difficulties that can be encountered using traditional laboratory identification methods.

Bos R. et al. *Influence of temperature on the co-adhesion of oral microbial pairs in saliva.* Eur J Oral Sci. 1996; 104(4 (Pt 1)) : 372-7.p Abstract: Coaggregation (interactions between two planktonic microorganisms) and co-adhesion (interactions between sessile and planktonic microorganisms) are believed to be important factors in the formation of dental plaque by many investigators, although others doubt whether coaggregation and co-adhesion occur in vivo. It is known that coaggregation and co-adhesion generally occur equally well in buffer as in saliva, but the influence of temperature on the co-adhesion of coaggregating oral microbial pairs in saliva is unknown. Therefore, co-adhesion of streptococci suspended in saliva to glass with adhering actinomyces present (1.0 x 10(6) cells cm-2) was studied in a parallel plate flow chamber in the temperature range from 22 degrees C to 40 degrees C. In the range from 22 degrees C up to 35 degrees C both pairs studied, Streptococcus oralis 34 with Actinomyces naeslundii 5951 and Streptococcus oralis J22 with A. naeslundii 5951, displayed similar co-adhesion kinetics and co-adhesion in a stationary end-point, but around and above 37 degrees C co-adhesion almost disappeared. Hence, we conclude that co-adhesion of coaggregating oral microbial pairs in saliva may be critically influenced by temperature, especially around the temperatures prevailing in the oral cavity.

Bosch J. et al. *[Puerperal endometritis: study of 52 clinically and microbiologically diagnosed cases].* Enferm Infecc Microbiol Clin. 1995; 13(4) : 203-8.p Abstract: BACKGROUND: To know the epidemiologic features, clinical manifestations and etiology of puerperal endometritis in our environment in addition to the use of endometrial cultures in the microbiologic diagnosis of this infection. METHODS: A retrospective study of 52 cases of puerperal endometritis, clinically and microbiologically diagnosed over a 4-year period. RESULTS: Fifty percent of patients had undergone a cesarean, 36.5% presented puerperal anemia and 23% presented upper amniorrhexis at 12 hours. All the patients presented puerperal fever greater than 38 degrees C, 46% uterine subinvolution and 24% fetid lochia. The most frequently isolated microorganisms in the endometrial aspirate were Escherichia coli, Streptococcus agalactiae and Bacteroides spp. The association of ampicillin plus cefoxitine and clindamycin plus tobramycin presented in vitro efficacy in more than 85% of the isolates. CONCLUSIONS: The practice of endometrial aspirate and blood cultures in patients suspected of having puerperal endometritis effectively contributes to the diagnosis and treatment of this infection.

Bossink A.W. et al. *Prediction of mortality in febrile medical patients: How useful are systemic inflammatory response syndrome and sepsis criteria?* Chest. 1998; 113(6) : 1533-41.p Abstract: STUDY OBJECTIVES: The aim was to evaluate demographic, clinical, and laboratory variables in febrile patients, with or without a microbiologically confirmed infection, for prediction of death, in comparison to the systemic inflammatory response syndrome (SIRS) and its criteria, such as abnormal temperature, tachycardia, tachypnea, and abnormal WBC count, and to sepsis, that includes SIRS and an infection. DESIGN: A prospective cohort study. SETTING: Department of internal medicine at a university hospital. PATIENTS: In 300 consecutive, hospitalized medical