WORLD HEALTH ORGANIZATION

FIFTY-EIGHTH WORLD HEALTH ASSEMBLY A58/14
Provisional agenda item 13.10 7 April 2005

Antimicrobial resistance: a threat to global health security

Rational use of medicines by prescribers and patients

Report by the Secretariat

1. Rational use of medicines requires that patients receive medications appropriate to their clinical needs, in doses that meet their individual requirements, for an adequate period of time, and at the lowest cost to them and their community. Clinically inappropriate and economically inefficient use of medicines is a very serious problem worldwide: it is estimated that more than half of all medicines are inappropriately prescribed, dispensed, or sold. Furthermore, about half of patients who receive medicines fail to take them correctly, and about one third of the world's population lacks access to essential medicines. This lack of access is compounded by irrational use of medicines, often including: use of more medicines than are clinically necessary (polypharmacy); inappropriate use of antimicrobial agents for non-bacterial infections; inappropriate selection or dosing of antibiotics for bacterial infections; over-use of injections when oral formulations would be more appropriate; failure to prescribe in accordance with clinical guidelines; and inappropriate self-medication, often of prescription-only medicines. The consequences are often serious morbidity and mortality, particularly with childhood infections, such as pneumonia, and chronic diseases, such as hypertension, diabetes, epilepsy and mental disorders. Unnecessary and excessive use of medicines wastes resources, often in the form of out-of-pocket payments by patients, and results in significant harm to patients through poor health outcomes and adverse drug reactions.

2. The extensive misuse of antimicrobial agents raises particular concern. This leads to bacterial pathogens becoming resistant, thereby rendering treatment ineffective. Resistant bacteria are an epidemiological concern, as they may spread locally, regionally or globally through individual contacts, poor sanitation, travel or the food chain; all these mechanisms of spread are facilitated by antimicrobial usage and the lack of effective infection-control programmes. The rapid and alarming spread of antibacterial resistance around the world has not been matched by a concerted and powerful public health response. Despite two previous resolutions on or related to antimicrobial resistance adopted by the Health Assembly[1] and the issue in 2001 of the strategy of WHO's Secretariat for the

[1] Resolutions WHA51.17 and WHA54.11.

containment of antimicrobial resistance,[1] action has been limited. Moreover, few new antibiotics are being developed to replace those rendered ineffective through resistance.

3. In some countries a large percentage of injections given may be unnecessary and many are given in non-sterile conditions, thereby contributing to the transmission of hepatitis B and C viruses and HIV.

4. Unnecessary use of medicines can stimulate inappropriate patient demand and overprescribing quickly exhausts stocks of medicines in public health facilities, leading to patients' loss of confidence in the health-care system and reduced attendance.

5. WHO took the first step towards rational use of medicines in 1977, when it established the first model list of essential medicines to support Member States in formulating their own national lists. The Health Assembly recognized the need for more rational use of drugs in resolution WHA37.33. A year later, in 1985, the present definition was agreed,[2] and in 1989 WHO formulated, with the International Network for the Rational Use of Drugs which it helped to establish, indicators for investigating drug use in primary health-care facilities. These indicators have subsequently been used in many drug-use surveys.

6. In 1997, a review of all the published reports of interventions with adequate study design concluded that printed educational materials alone and traditional lecture-style educational seminars had little success. Effective interventions included peer involvement in quality improvement, enhanced supervision, audit and feedback of performance data, and case management at community level of respiratory illness and malaria. The effects of training were variable, and the most successful programmes focused on only a few target problems, with interactive training methods, repeated contacts with trainees, and supervision of follow-up.

7. Following the recommendations made at the First International Conference on Improving Use of Medicines (Chiang Mai, Thailand, 1-4 April 1997), WHO's Secretariat and partners have supported further intervention studies to fill the knowledge gaps identified. In 2002 the Secretariat issued a policy paper on the core components of promoting rational use of medicines, based on the lessons learnt from past work.[3] As regular monitoring of the use of medicines is crucial to promoting more rational use, systems for such monitoring are recommended for all countries, together with the following interventions that have proven to be successful:

- establishing a mandated multidisciplinary national body to coordinate policies on medicine use as part of a national medicines policy
- formulating and using evidence-based clinical guidelines for training and supervision
- selecting essential medicines lists based on treatments of choice
- setting up drug and therapeutics committees in larger hospitals

[1] Document WHO/CDS/CSR/DRS/2001.2.

[2] *The rational use of drugs: report of the conference of experts, Nairobi, 25-29 November 1985*. Geneva, World Health Organization, 1987.

[3] Document WHO/EDM/2002.3.

- promoting problem-based training in pharmacotherapy as part of undergraduate training
- making continuing in-service medical education a requirement of licensure
- promoting systems of supervision, audit and feedback in institutional settings
- providing independent information about medicines
- promoting public education about medicines
- eliminating perverse financial incentives that lead to irrational prescribing
- drawing up and enforcing regulation, including that of promotional activities
- reserving sufficient governmental expenditure to ensure equitable availability of medicines and health personnel.

8. In recent years WHO's Secretariat has established two databases, one to monitor the pharmaceutical situation in Member States and the achievement of national drug policy objectives, and the second to monitor data about key aspects of medicines use. Analysis of these data shows that: few Member States are regularly monitoring use of medicines nationally or implementing all the recommended core components for promoting rational use of medicines;[1] the widespread misuse of medicines seen over the past decade continues; and relatively few interventions are being made at national scale to promote more rational use of medicines. The data also confirm that half of all patients are still not treated in compliance with clinical guidelines. There has been some improvement in injection use, which has decreased notably in the past decade.

9. The use of antimicrobial agents has continued to rise and is frequently inappropriate, and antimicrobial resistance has increased despite the concerns expressed by the Health Assembly.[2] In 2001, WHO's Secretariat issued a global strategy for containment of antimicrobial resistance,[3] but few countries have started to implement it in a coordinated way. Increasing awareness by monitoring of antimicrobial use and antimicrobial drug resistance in all Member States is a first necessary step.

10. In recent years, faced with rapidly increasing health-care costs, many governments have undertaken programmes of health reform, with reduction of centrally-organized health services, decentralization, and liberalization of the private health sector. These changes have given increasing prominence to concerns about access to essential medicines. Even though greater global recognition of the catastrophic epidemics of HIV/AIDS, tuberculosis and malaria has led to new initiatives to expand access to the medicines needed to treat those conditions, concerns are growing about accelerating rates of antimicrobial resistance and rising prices for alternative antimicrobial agents to treat infections due to resistant pathogens.

11. Evidence presented at the Second International Conference on Improving Use of Medicines (Chiang Mai, Thailand, 2004), which was supported by WHO, made it clear that, despite some

[1] Document WHO/EDM/2002.3.

[2] Resolutions WHA51.17 and WHA54.11.

[3] Document WHO/CDS/CSR/DRS/2001.2.

progress, widespread misuse of medicines continues and has serious health and economic implications, especially in resource-poor settings. Participants called on governments to implement policies and programmes in priority areas (see below).

12. Many promising and successful interventions were described at that conference, yet progress is confined primarily to pilot projects. There are few reports of effective national efforts to improve the use of medicines on a large scale and in a sustainable manner. The conference therefore highlighted the need to move from small-scale research projects to implementing programmes that make **large-scale** and **sustained** improvements within health systems. The three major recommendations made at the conference are presented below, with supporting evidence.

PROGRAMMES TO IMPROVE USE OF MEDICINES

13. Data from Kyrgyzstan, the Lao People's Democratic Republic and Oman show that systematic implementation of a comprehensive national medicines policy improves use of medicines. Implementation should be based on local evidence; should cover both the private and public sectors; should include interventions at multiple levels of the health-care system; and should be long term, since implementation takes time, with continued stakeholder commitment and adequate human resources.

14. Broad-based insurance systems covering essential medicines for the poor can be introduced in low-income settings. Countries should strengthen efforts to develop and extend insurance systems, which can be used to promote better prescribing, more cost-effective use of medicines by consumers, and lower prices from industry.

15. Policies for prescribing and dispensing generic medicines can dramatically decrease the cost of medicines to consumers and health programmes. They must be accompanied by programmes to assure quality of medicines.

16. Policies to separate the functions of prescribing and dispensing may face obstacles, but are feasible. This division removes incentives to over-prescribe and can result in improved use of medicines and lower costs to consumers and health-care programmes.

17. In settings where patients contribute to paying the cost of care, a flat-rate charge leads to increased demand for medicines. Charges can be structured to promote more rational use of medicines, for example by linking the level of co-payment to the type and quantities of medicines received.

18. Prices markedly determine access to medicines. The standardized methods for monitoring the prices of medicines developed by the Secretariat and Health Action International allow countries to measure what people pay and affordability of essential medicines. All countries should now measure prices of essential medicines, rationalize policies that determine price, and monitor comparative price information over time.

Successful interventions should be sustainably expanded to national level

19. Multifaceted, coordinated interventions are more effective than single interventions in changing prescribing practices by both public and private sector health providers. They should be based on detailed analyses of existing problems and take into account financial incentives. Evidence from Sweden demonstrates that a nationwide, multifaceted intervention can improve use of antibiotics and

contain antimicrobial resistance. Intervention strategies should reflect local needs and may include media campaigns, treatment guidelines, and individual and group feedback on practice.

20. Misuse of medicines in hospitals remains problematic. Data from Cambodia, Indonesia, and the Lao People's Democratic Republic, however, show that a structured quality-improvement process enhances use of medicines in hospitals and can be transferred between countries.

21. Countries should monitor impact when expanding interventions to improve use of medicines. In particular, they should use valid indicators to monitor the long-term impact on equity of access to medicines, quality of care, affordability and cost. Such action will allow countries to evaluate programmes and refine approaches based on evidence.

22. One example is the shortening of antibiotic therapy for childhood pneumonia, the major killer of children in developing countries. Short-course (3-day) antibiotic therapy is effective for most cases of non-severe pneumonia and by comparison with longer (5-7 day) therapy costs less, increases adherence and causes fewer side effects; it also decreases the likelihood of the emergence of resistant bacteria.

Interventions should address medicine use in the community

23. In many countries, most medicines are purchased in pharmacies and drug shops, often without input from trained medical personnel. Several interventions involving outreach, peer process, regulatory enforcement and incentives have shown short-term success in improving practice in such settings. Working with professional and trade associations, countries should design sustainable programmes to measure and improve quality of retail pharmacy practice.

24. Poor adherence to therapy contributes to the emergence and rapid spread of antimicrobial resistance. Resistance to commonly used drugs has been observed in patients with respiratory infections, malaria, diarrhoeal diseases, tuberculosis, sexually transmitted infections and HIV/AIDS. As global programmes expand access to therapies for HIV, malaria and tuberculosis, countries must implement systems to ensure compliance as an integral part of treatment programmes and monitor the emergence of resistance to treatments.

25. Recent studies have shown that children can be effective agents of change to improve use of medicines at community level. Countries should consider school-based education programmes as a means for preparing children to convey key messages to parents.

26. Pharmaceutical promotion often has negative effects on prescribing and consumer choice, but regulation of promotional activities has been proven to be one of the few effective interventions. Countries should therefore consider regulating and monitoring the quality of drug advertising and of the pharmaceutical industry's promotional practices, and enforcing sanctions for violations.

27. Complementary and alternative medicines often play a significant role in meeting individuals' needs for affordable essential medicines. Countries should, however, review their policies concerning the quality, safety and efficacy of such medicines.

28. Evidence is still lacking about how to improve use of medicines for chronic conditions, including diabetes, hypertension, epilepsy and mental health problems in resource-poor settings. Given the increasing prevalence of these diseases in the world and the growing need for life-long treatment of HIV/AIDS, it is urgent to identify successful interventions to promote more cost-effective, long-term use of medicines and to promote adherence to chronic treatment.

DISCUSSION AT THE EXECUTIVE BOARD

29. At its 115th session in January 2005, members of the Board expressed concern about the irrational use of medicines and the increasing problem of antimicrobial resistance.[1] The Board adopted a resolution that tackled that latter problem.

ACTION BY THE HEALTH ASSEMBLY

30. The Health Assembly is invited to consider the draft resolution contained in resolution EB115.R6.

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[1] See document EB115/2005/REC/2, summary record of the tenth meeting, section 2.