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PROGRESS REPORT

EMERGING AND RESURGING DISEASES IN THE EASTERN MEDITERRANEAN REGION WITH SPECIAL REFERENCE TO MALARIA

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1. INTRODUCTION

As the efforts to control known infectious diseases continue, new threats of communicable diseases have emerged. Several diseases once thought to have been under control or retreating have made a deadly comeback. Even worse, new killer diseases have appeared for which there is little knowledge about their prevention or treatment.

The Regional Committee for the Eastern Mediterranean Region at its Forty-fifth Session held in Beirut, Lebanon, 3–6 October 1998, discussed emerging and resurging diseases in the Region with special reference to malaria and adopted resolution EM/RC45/R.3 in which it:

a) Urged all Member States to:

- Continue strengthening their epidemiological surveillance of infectious diseases and their capabilities to respond to the emergence of these diseases in line with the regional plan on emerging and re-emerging diseases;
- Promote cooperation with neighbouring countries in surveillance and prevention and control of imported infectious diseases;
- Promote applied research related to emerging infectious diseases including malaria;

b) Urged Member States with the afrotropical type of malaria to:

- Strengthen national capabilities in early diagnosis, case management, forecasting and prevention and control of malaria epidemics;
- Promote the use of personal protection measures, especially the use of protective insecticide-impregnated materials;

c) Urged Member States that have achieved interruption of malaria transmission to:

- Continue to identify and control any re-introduction of the disease at an early stage;
- Support activities towards malaria eradication in areas where it is feasible;

d) Requested the Regional Director to report regularly to the Regional Committee on progress made in the prevention and control of emerging and re-emerging diseases with special reference to malaria.

Adoption of this resolution coincided with an important development in the worldwide effort to combat infectious diseases: the launching of two priority cabinet projects, Stop Tuberculosis (STB) and Roll Back Malaria (RBM). Similarly, the resolution coincided with increased global and regional awareness of the importance of strengthened surveillance of priority communicable diseases and epidemic preparedness and response. Consequently,

activities aimed at the implementation of the above resolution were intimately linked with other activities within these two projects.

2. ACTIVITIES UNDERTAKEN IN RESPONSE TO RESOLUTION EM/RC45/R.3

2.1 Strengthening epidemiological surveillance

Strengthening communicable disease surveillance systems was the focus of considerable attention in countries in 1999. The national disease surveillance systems were reviewed in two countries, Egypt and the Syrian Arab Republic, by WHO and national experts. The reviews assessed the current situation, identified constraints, made recommendations and proposed a practical action plan for implementation of the recommendations. Attention was given by several countries to developing and updating national plans of action and guidelines on disease surveillance and to publishing epidemiological bulletins or surveillance newsletters. Attention was also given to preparing case definitions for surveillance purposes, identifying national priority diseases for surveillance, defining responsibilities of the different health levels as well as printing and distributing the updated surveillance guidelines. In 1998 a training manual, *Surveillance of communicable diseases*, was developed by the Regional Office and distributed to all countries of the Region.

Most of the countries of the Region conducted national training activities on communicable disease surveillance and response. WHO consultants visited Qatar to train primary health care physicians on communicable diseases surveillance and response and to establish a communicable disease surveillance database. Disease early warning systems gained momentum in Pakistan in 1999. An efficient disease early warning system is currently operational in several districts, and a similar system is being developed in south Sudan. The Regional Office works closely with several collaborating centres on influenza surveillance in Egypt and the Syrian Arab Republic.

In keeping with the RBM approach, the Regional Office focused support on countries with afrotropical malaria (Djibouti, Somalia, Sudan and Republic of Yemen). However, countries outside sub-Saharan Africa were also supported, especially those with very serious malaria problems (Afghanistan and Iraq). Support was also sustained for countries with effective systems and good malaria control (Islamic Republic of Iran, Pakistan, Saudi Arabia and Syrian Arab Republic) and malaria eradication was promoted in countries where interruption of malaria transmission is feasible and potentially sustainable (Egypt, Morocco, Oman and United Arab Emirates). The latter four countries adopted interruption of malaria transmission as the objective of their national malaria control programmes.

A WHO expert assisted Pakistan in reviewing the national plan for prevention and control of viral hepatitis and guidelines for laboratory-based surveillance, prevention and control of viral hepatitis were developed in Egypt by a joint team including WHO consultants. Other countries received assistance in conducting national training workshops on surveillance of viral hepatitis and practical measures for its prevention and control.

One of the priorities of the RBM initiative is to support surveillance activities in countries. Depending on the epidemiological situation and objectives of the national programmes, surveillance was concentrated on forecasting and early detection of malaria epidemics in the countries with afrotropical malaria and on comprehensive detection of malaria transmission in the countries progressing towards malaria eradication. The following activities were supported:

- human resources for malaria control: workshops on surveillance, including surveillance of vectors in Somalia, Syrian Arab Republic and Sudan; training of medical and laboratory personnel in malaria diagnosis in Afghanistan, Iraq, Pakistan, Somalia, Sudan and Republic of Yemen; and strengthening of the surveillance workforce in Sudan;
- supplies: diagnostic materials for Afghanistan, Iraq, Djibouti, Egypt, Islamic Republic of Iran, Pakistan, Somalia, Sudan and Republic of Yemen; informatics equipment for Djibouti, Sudan and Republic of Yemen; communication tools to assist surveillance in remote areas in Sudan; and a vehicle to assist the nationals in supervisory visits and fieldwork in Djibouti;
- promoting self-reliance: supporting local formulation of antimalarial drugs and manufacturing of bednets in Sudan;
- rehabilitation of some national malaria control programmes: construction of a malaria centre in Hargeisa (Somalia);
- publications: translation of the manual on malaria control for the community health workers into Arabic and its distribution to all Arabic-speaking countries; preparation of malaria booklets and charts in local languages in Afghanistan, Somalia and Sudan; and dissemination of various publications on malaria diagnosis and management.

RBM encouraged countries to have computerized information and a database on malaria. A project is being supported in the Islamic Republic of Iran under the small grants scheme to develop and validate a computer-based system for malaria surveillance, with special emphasis on monitoring the functional status of malaria foci. This is important for the programmes that are effectively controlling malaria transmission, striving to stop it altogether or preventing its reintroduction. If this project shows success, most of the countries of the Region may benefit.

A proposal was made to integrate a computer database on malaria with geographic information systems (GIS), which would allow for the processing and integration of large amounts of different types of information. This is particularly important for malaria and other parasitic diseases with complex parasitic systems in which eco-geographical variables play a crucial role. Practical steps to introduce GIS technology for malaria control have been made in the Islamic Republic of Iran and Sudan. As part of the RBM composite plan, a regional workshop on GIS is planned during 2000–2001.

As increasing drug resistance is one of the serious constraints to controlling malaria, surveillance needs to include this phenomenon. So far, drug resistance is present only in *Plasmodium falciparum* endemic areas, i.e. in countries with afrotropical (Djibouti, Saudi

Arabia, Somalia, Sudan and Republic of Yemen) and oriental types of malaria (Afghanistan, Islamic Republic of Iran, Oman and Pakistan). RBM is promoting continuous monitoring of sensitivity to antimalarials through sentinel sites. A research project was supported in Sudan with the result that several sentinel sites are now operating there. It is planned to expand the system to involve more sites. Consultants were sent to Pakistan and the Republic of Yemen to assist in developing sentinel surveillance of drug sensitivity.

2.2 Strengthening response capabilities

Emerging infectious diseases, with their serious epidemic potential and poor outcome, continued to be of concern in 1999 both globally and regionally. National training workshops on prevention and control of emerging diseases and drug resistance were conducted in Egypt, Jordan, Morocco, Pakistan, Saudi Arabia and Syrian Arab Republic. The Syrian Arab Republic reviewed the national plan for control of emerging diseases and drug resistance and conducted a study on antimicrobial drug resistance for typhoid fever. A WHO consultant visited Kuwait to help strengthen surveillance of drug-resistant pathogens and develop a national plan for control of emerging diseases and drug resistance. National guidelines for prevention and control of emerging diseases were developed in Saudi Arabia.

The Regional Director established a task force on antimicrobial drug resistance with the objective of reviewing the role of WHO, streamlining collaborative activities with countries and proposing a common framework to consolidate regional efforts for surveillance, control and preventive action.

An intercountry meeting on epidemic forecasting, preparedness and response was held in Cairo in November 1999 and attended by senior officers from 10 countries. The purpose of this meeting was to discuss the development of epidemic forecasting, preparedness and outbreak containment strategies for selected high priority diseases with epidemic potential, review and learn from recent experiences of participating countries and review national plans for forecasting, preparedness and response to epidemics.

Human resources continue to be the cornerstone of epidemic prevention and control. Workshops for the training of senior trainers on implementation of epidemic preparedness and response were conducted in Cyprus, Jordan, Iraq, Morocco, Pakistan, Saudi Arabia, Sudan, Syrian Arab Republic and Republic of Yemen.

Intercountry training on malaria control has been revitalized in the Region. Currently it is conducted at two centres: a division of the Teheran School of Public Health in Bandar Abbas, Islamic Republic of Iran; and the Blue Nile Research and Training Institute, Wad Medani, Sudan. It is expected that these centres will become part of a more comprehensive network that will address specific training needs (epidemiology, entomology and vector control) in relation to particular eco-geographical types of malaria (afrotropical versus non-afrotropical). Evaluation of the functioning centres and feasibility studies are planned in 2000–2001 to assess the possibility of upgrading other centres to an international level.

WHO provided material support for epidemic preparedness through procurement of supplies for advance preparedness of cholera outbreaks in Somalia as well as vaccines for meningitis epidemics in Sudan. The Regional Office continues to maintain 1 million doses of meningitis vaccine for advance preparedness against epidemics.

Epidemic preparedness is also an important issue in malaria control. To enhance it, countries are supported in maintaining a contingency stock of antimalarial drugs, insecticides and spraying equipment. Such supplies were provided to several countries, especially to epidemic-prone countries like Djibouti, Sudan and the Republic of Yemen. WHO consultants were also sent to assist in epidemic preparedness and forecasting of epidemics (Sudan). The Regional Office/RBM composite plan for 2000–2001 includes the conducting of an intercountry workshop on epidemic preparedness and development of an epidemic preparedness plan.

Many activities were conducted to strengthen laboratory capabilities for detecting common pathogens and performing antimicrobial drug resistance surveillance in the Region. WHO experts evaluated the laboratory services in Sudan to assess the current situation and make recommendations for improvement. As a result of this evaluation, Sudan was supplied with extensive technical and material laboratory support. Laboratory support was also provided to Egypt, Iraq, Oman, Pakistan and Somalia. National training workshops on laboratory diagnosis of different pathogens were held in Egypt, Iraq, Morocco, Oman, Pakistan and Sudan. National guidelines for prevention and control of viral hepatitis were developed by a WHO consultant in Egypt. Pakistan also invited WHO experts to assist in the development of a national viral hepatitis surveillance plan.

Quality assurance of laboratory diagnosis is a backbone of surveillance for malaria. However, quality assurance systems that were established in a number of countries during previous malaria eradication efforts have deteriorated in many cases and are not in line with the new strategies for malaria control. During 2000–2001 current practices of quality control in laboratory diagnosis of malaria will be inventoried. Suggestions for reorganizing the system will be field-tested and a regional workshop will be convened to produce guidelines for quality assurance of laboratory diagnosis.

In 1999 the Regional Office continued its role in disseminating information about the global situation of emerging diseases, including data on the epidemiology of diseases, their prevention and control and measures to be taken in various situations. Fact sheets, information bulletins and press releases were the main modes of disseminating this information. In addition, requests from countries for particular information on specific situations were promptly answered.

To improve reporting of meningitis and cholera between countries, a special format for monthly reporting of the weekly occurrence of meningitis and cholera/epidemic diarrhoea was developed, and all countries were requested to report the monthly compiled statistics of meningitis and cholera/epidemic diarrhoea to the Regional Office. Updated data will be disseminated monthly to countries, other WHO regions and WHO headquarters using electronic mail.

Tuberculosis surveillance was further strengthened in countries through the introduction of the *EMR DOTS quarterly fax* in 1999. This innovative system collects key information on tuberculosis control such as DOTS coverage, case notifications and treatment outcome, and monitors progress in all countries on a quarterly basis. It is the first system of its kind in the world.

2.3 Promotion of cooperation with neighbouring countries in surveillance and prevention and control of imported infectious diseases

An agreement between the Regional Office, the United States Naval Medical Research Unit (NAMRU-3) in Cairo and the Field Epidemiology Training Programme supported by the Centers for Disease Prevention and Control (CDC), Atlanta, was successfully implemented in 1999. An expert was sponsored by NAMRU-3 to participate in the evaluation of activities to control the meningitis epidemic in Sudan during June 1999.

A WHO initiative for the control of cholera and other diarrhoeal diseases in the Horn of Africa continued its technical and material support to Djibouti, Somalia and south Sudan. Situation analysis of epidemic preparedness in these countries is continuing. A review mission was conducted in Djibouti in 1999. The progress of the plan of action of the initiative was reviewed in a meeting of the executive committee in Geneva in October 1999.

Countries collaborated at the subregional level to promote joint tuberculosis control activities. The member states of the Gulf Cooperation Council adopted the use of standardized at-home screening for tuberculosis. The countries in the Horn of Africa established standardized technical procedures and a patient referral form for the monitoring/surveillance of cross-border tuberculosis patients. The countries in the Near East introduced a similar system for the cross-border tuberculosis control, and the countries in the Maghreb are also planning to introduce a similar system.

Excellent coordination with WHO collaborating centres has been achieved, particularly in providing diagnostic services of suspected disease outbreaks such as the different haemorrhagic fevers. Disease centres and virology laboratories in the United States of America, South Africa and in the United Kingdom were very cooperative.

As the WHO African and Eastern Mediterranean Regions share between them the highest malaria incidence in the world, cooperation between these regions in malaria control is a long-standing policy. An important meeting was held in Sana'a, Republic of Yemen, in July 1998 to foster cooperation between Eritrea, Djibouti, Somalia, Sudan and Republic of Yemen. The Regional Office is also striving to intensify its joint activities in malaria control with its other neighbouring regions as well. Cooperation with the European Region intensified in 1999. A joint coordination meeting was conducted in Baku, Azerbaijan, in August 1999, at which some of the countries of the former Soviet Union (Armenia, Azerbaijan, Georgia, Russia, Tajikistan, Turkmenistan and Uzbekistan) were present for the first time, in addition to Turkey, Afghanistan, Islamic Republic of Iran and Syrian Arab Republic.

2.4 Promotion of applied research related to emerging infectious diseases including malaria

Different research priorities exist throughout the Region, and infectious diseases have not traditionally been among them. Little research directed to emerging infectious diseases means that little knowledge exists about their prevention and treatment. More resources are needed to support applied research in the field of emerging and resurging infectious diseases.

Support from the Regional Office in this area included research conducted in the Syrian Arab Republic to study the occurrence and epidemiology of antimicrobial drug resistance of typhoid fever. Cost-effectiveness research on DOTS was carried out in Egypt and the Syrian Arab Republic, and confirmed that DOTS integrated into primary health care is the most cost-effective mechanism in tuberculosis control. This was the first DOTS cost-effectiveness research in middle-income countries in the world. Tuberculosis research will be further promoted as tuberculosis has now been included in the scope of tropical diseases research (TDR).

In 1992 the Regional Office and WHO headquarters initiated the small grants scheme for tropical disease research. This programme has two great strengths: it provides funds to scientists in countries without a strong tradition for medical research, such as Somalia, Palestine or the Republic of Yemen, who would probably be unable to compete in the international arena for grants; and it allows these scientists to address local problems that might not otherwise receive any attention.

Every year a call for research proposals with suggested topics is circulated in the Region. Malaria has been one of the suggested topics since 1995. In 2000 the suggested topics are malaria, leishmaniasis and, for the first time, tuberculosis. The grants scheme is mostly concerned with applied-field research, which is likely to produce results that might be immediately used by the control programmes. Total funds available for the grants are US\$ 100 000 per year, and the ceiling per project has been established at US\$ 15 000. The scheme has become so popular that about 70 applications are received every year, and the competition is intense. In 1999, for example, only 11 out of 66 applications were supported. Currently, efforts are being made to mobilize resources in order to expand the scheme.

In addition to the small grants scheme, RBM supports a number of applied research projects from other sources of funds. Several research projects have been supported in Sudan, for example, such as quality of antimalarial drugs, modelling malaria epidemics, use of various insecticide-impregnated materials and a school-based education programme for malaria control.

3. CONSTRAINTS

There is much room for improvement in communicable disease surveillance in the Region. Powerful surveillance mechanisms have been established for diseases targeted for eradication and elimination programmes and have led to success in reaching those targets. However, the epidemiological surveillance of emerging diseases needs to be given higher priority in resource allocation, training and supervision. There is a need for integration, within the same surveillance

system, of diseases that have traditionally been monitored separately, such as malaria, tuberculosis and other communicable diseases.

While several countries have strong capabilities for responding to emerging diseases and outbreaks of infectious diseases, other countries are vulnerable to severe outbreaks for a variety of reasons, including border conflicts and civil war. This threat has the potential to affect not only the population within the vulnerable country but also the populations of neighbouring countries.

Several countries continue to shy away from full disclosure about the occurrence of outbreaks of certain diseases, such as cholera, for fear of economic repercussions. Others do not report weekly occurrence of notifiable diseases, namely cholera and meningitis, to the Regional Office. It is important that all countries report all occurrences in order for accurate information to be disseminated to national health authorities about the regional and global occurrence of these two diseases.

Disease research, particularly for infectious and emerging diseases, needs to be supported by national academic and research institutions. The WHO small grants scheme, although important as seed support, cannot support the full range of research needed in the epidemiology, prevention and control of infectious and emerging diseases. Moreover, it has become increasingly difficult to operate the small grants scheme on an ad hoc basis without a specially designated unit and increased financial input, in view of both the growing popularity of the scheme and its increased scope, which now includes tuberculosis and dengue fever.

International training centres in malaria control supported by the Regional Office have demonstrated their value; however, they have no stable sources of support. The problem of financing participants needs to be resolved in order to increase the number of international participants.