

Communicable diseases

in the Eastern Mediterranean Region
Prevention and control 2005–2009



**World Health
Organization**

Regional Office for the Eastern Mediterranean

WHO Library Cataloguing in Publication Data

World Health Organization. Regional Office for the Eastern Mediterranean

Communicable diseases in the Eastern Mediterranean Region. Prevention and control 2005–2009 / World Health Organization. Regional Office for the Eastern Mediterranean

p.

ISBN: 978-92-9021-758-9

ISBN: 978-92-9021-759-6 (online)

1. Communicable Diseases - Eastern Mediterranean Region 2. Communicable Disease Control - Eastern Mediterranean Region 3. HIV - prevention and control 4. Acquired Immunodeficiency Syndrome - prevention and control 5. Tuberculosis - prevention and control 6. Vaccines 7. Safety Management I. Title II. Regional Office for the Eastern Mediterranean

(NLM Classification: WA 110)

The following people contributed to the development of this report: Abrar Ahmed Chugtai, Hoda Atta, Ghasem Zamani, Samiha Baghdadi, Amal Bassili, Salem Barghout, Akihiro Seita, Wasiq Khan, Riad Ben Ismail, Hany Ziady, Jose Postigo, John Jabbour, Dalia Samhouri, Joumana Hermez, Hamida Khattabi, Gabriele Riedner, Mohamed Mudawi, Abraham Mnzava, Ezzedine Mohsni, Nadia Teleb, Nahad Sadrazodi, Alireza Mafi, Mamunur Malik and Langoya Opoka. It was edited by Justin Graf.

Photographic acknowledgements: WHO, Ricardo Venturi, Hammad Darwish.

© World Health Organization 2011

All rights reserved

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of a country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by the World Health Organization in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

All reasonable precautions have been taken by the World Health Organization to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either expressed or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall the World Organization be liable for damages arising from its use.

Publications of the World Health Organization can be obtained from Health Publications, Production and Dissemination, World Health Organization, Regional Office for the Eastern Mediterranean, P.O.Box 7608, Nasr City, Cairo 11371, Egypt. Tel: +202 2670 2535, fax: +202 2670 2492; email: PAM@emro.who.int. Requests for permission to reproduce, in part or in whole, or to translate publications of WHO Regional Office for the Eastern Mediterranean—whether for sale or for noncommercial distribution—should be addressed to Regional Advisor, Global Arabic Programme, WHO Regional Office for the Eastern Mediterranean, at the above address: email: WAP@emro.who.int.

Contents

Foreword	5
Introduction	7
Vision 1 – Elimination and eradication of specific diseases	9
Vision 2 – Expanding disease-free areas	23
Vision 3 – Providing a safe vaccine for every childhood disease for every child	37
Vision 4 – Curbing the HIV/AIDS epidemic	47
Vision 5 – Halving the burden of tuberculosis — working towards elimination	59
Vision 6 – Containing new and re-emerging disease threats	71
Technical support for Global Fund-related activities	82
Support for operational research in communicable diseases	83
The way forward	85

Foreword



Communicable diseases are among the key causes of mortality and morbidity and pose major barriers to the social and economic well-being of people in the WHO Eastern Mediterranean Region. A sustained response towards prevention and control of vector-borne diseases (particularly malaria), tuberculosis, HIV/AIDS and other sexually transmitted infections, measles and other vaccine-preventable diseases is a high priority for the Region. In this context, I am pleased to share with you the progress and challenges in regard to communicable diseases. The report provides an overview of the situation of communicable diseases, the progress made by countries with support from WHO and partners, and the key challenges for disease prevention and control during the period 2005–2009. It describes significant and appreciable regional progress in controlling communicable diseases in order to meet regional and global goals of eradication and elimination.

This progress includes regional routine vaccination coverage reaching 87% for the first time, a continued trend of decline in the number of measles cases and measles elimination in eight countries. In the area of HIV/AIDS care, all countries have reported providing antiretroviral medicines free of charge while the number of people living with HIV and receiving antiretroviral therapy almost tripled between 2006 and 2009. Availability of diagnosis and treatment services for tuberculosis has increased and more than 2 million people were cured of the disease in the reporting period. The regional tuberculosis notification rate reached 70 per 100 000 population, and the regional average treatment success rate of smear-positive pulmonary tuberculosis reached 88%, exceeding the global target of 85%. Thirteen countries in the Region are now free of malaria. Progress has also been made

in preparedness and response to emerging or re-emerging disease threats. As a result, countries were able to respond effectively and efficiently to the pandemic (H1N1) 2009. WHO supported countries in mobilizing resources from donors, such as the Global Fund to Fight AIDS, Tuberculosis and Malaria, for communicable disease control, and funding for the Region has seen a significant increase. Operational research in communicable diseases was supported through the small grants scheme.

The progress described reflects successful partnership between ministries of health, WHO and the donor community. However, the challenges are many and require sustained and concerted efforts. We still need to work hard to achieve elimination and eradication of communicable diseases in Sudan. Slow progress in health system development and accompanying obstacles could stall the progress towards malaria elimination. A proactive response is required to the need for development in technical and managerial capacities within countries to deal with vaccine-preventable diseases. Progress in increasing coverage with quality HIV treatment and care services is slow and faces obstacles but needs to be addressed. Finally, complex emergency situations in several countries are affecting the provision of tuberculosis care and surveillance.

Our resolve in tackling these challenges is strong. Progress indicates our ability to move ahead. We have a good understanding of what works and what does not. It is now our collective response that will see control of communicable disease in the Region and ensure healthier and more prosperous lives for the people of the Region.

Hussein A. Gezairy, MD, FRCS
WHO Regional Director for the Eastern Mediterranean

Introduction



The importance of communicable disease control in the WHO Eastern Mediterranean Region has increased in recent years as a result of increased travel, trade and migration. As in other regions, communicable diseases are among the major causes of mortality and morbidity in the

Eastern Mediterranean Region and pose major impediments to social and economic well-being. Vector-borne diseases (particularly malaria), tuberculosis, HIV/AIDS and other sexually transmitted infections, and measles and other vaccine-preventable diseases are among the most important and prevalent communicable diseases in the Region.

The Millennium Development Goals (MDGs) were adopted in September 2000, as part of the United Nations Millennium Declaration (Resolution 55/2) and endorsed by 189 countries. Most of these goals are directly or indirectly related to communicable diseases. For example, Goal 1, eradicating extreme poverty and hunger, reflects the known fact that most communicable diseases are linked to poverty and malnourishment. Acute respiratory tract infections, diarrhoea, HIV/AIDS, tuberculosis, malaria, measles and vector-borne diseases are more common in poor and disadvantaged groups. Goals 2, 3, 4 and 5 aim to address education, gender equality and the health of children and mothers, all of which are closely related. Communicable diseases are among the major causes of maternal and childhood morbidity and mortality. Evidence from the Region, and elsewhere, clearly demonstrates that the children of educated women are more likely

to survive from communicable and other diseases in childhood, than the children of uneducated mothers.

Goal 6 directly focuses on three of the most important communicable diseases, HIV/AIDS, malaria and tuberculosis, all of which are recognized as global emergencies. Goal 7 focuses on environmental sustainability, including the need to ensure that safe water and sanitation are made available to a larger proportion of the world's population. This is vital because safe water and sanitation are directly related to the spread of food and water-borne communicable diseases, such as diarrhoea, cholera and hepatitis A and E. Goal 8, developing a global partnership for development, is implicated with the initiatives of the Global Fund to Fight AIDS, Tuberculosis and Malaria (the Global Fund) and the GAVI Alliance for vaccine-preventable diseases. Furthermore, Goal 8 identifies the need to cooperate with pharmaceutical companies to provide access to affordable and essential medicines for communicable diseases in developing countries.

This report provides an overview of the status of communicable diseases in the Eastern Mediterranean Region. The report highlights the progress in communicable disease prevention and control from 2005 to 2009. The structure of the report is based on the six visions developed by the Division of Communicable Disease Control in the Region. The contributions of the Global Fund to Fight AIDS, Tuberculosis and Malaria and the small grants scheme to support operational research in communicable diseases are also discussed at the end of the report.

Jaouad Mahjour
Director, Communicable Disease Control

Visions for communicable disease prevention and control in the Eastern Mediterranean Region

Vision 1: Elimination and eradication of specific diseases

The vision for our Region encompasses the elimination of deadly and disfiguring diseases such as lymphatic filariasis, leprosy and diseases that can be prevented by childhood vaccination, such as measles and maternal and neonatal tetanus. We also envision the eradication of Dracunculiasis (dracunculiasis) from the Region.

Vision 2: Expanding disease-free areas

Our vision is to expand areas that are free of malaria, schistosomiasis and leishmaniasis, and achieve a Region free of onchocerciasis and trypanosomiasis. This will release large numbers of people and whole communities in our Region from painful and often fatal diseases that can now be prevented.

Vision 3: Providing a safe vaccine for every childhood disease for every child

Our vision is that every child will receive a safe vaccine for each childhood vaccine-preventable disease. New and improved vaccines of regional importance will be added to the vaccination schedule as soon as they become available. This is the gateway for our ultimate goal: "No child will die from a vaccine-preventable disease in our Region".

Vision 4: Curbing the HIV/AIDS epidemic

Antiretroviral therapy is now available to all. The comprehensive package for prevention and care for HIV/AIDS is now complete. Our vision is to curb the epidemic by adopting this comprehensive package in all countries of the Region.

Vision 5: Halving the burden of tuberculosis – working towards elimination

Our immediate vision is to halve the number of cases and deaths from tuberculosis in our Region. In the long term, we will strive to eliminate tuberculosis in the lifetime of the first child born in this millennium. We must achieve these targets in order to play our role in the global efforts to reverse the expansion of this preventable and curable disease.

Vision 6: Containing new and re-emerging disease threats

With the extension of global air travel, neglected local disease threats can quickly spread and become global emergencies. Our Region must be prepared to respond rapidly to any emerging or re-emerging disease threats. The earlier a disease threat is identified, the easier it is to contain.



Vision 1

Elimination
and
eradication
of specific
diseases

To eliminate potentially fatal or disfiguring diseases such as lymphatic filariasis, dracunculiasis (guinea-worm disease) and leprosy, and vaccine-preventable diseases, such as measles and maternal and neonatal tetanus.

Vision 1

Summary

Eliminating dracunculiasis (guinea-worm disease), lymphatic filariasis, leprosy, measles, and maternal and neonatal tetanus is a primary focus in the Eastern Mediterranean Region. The global and regional targets for elimination have been set for individual diseases, such that by 2015 all diseases will be eliminated from the Region.

The global and regional goal of eliminating dracunculiasis by 2009 was not achieved, due to persistence of the disease in Sudan in the Eastern Mediterranean Region, as well as in Ghana, Ethiopia and Mali in the African Region. In 2009, all 2733 cases that were reported in the Eastern Mediterranean Region were in southern Sudan, representing about 86% of the global dracunculiasis disease burden. With continued efforts, particularly in southern Sudan, dracunculiasis is poised to become only the second disease in the world to be eradicated. Lymphatic filariasis is endemic mainly in Sudan and some parts of Egypt and Yemen, and represents only 1% of the global lymphatic filariasis disease burden. Significant progress has been made in eliminating lymphatic filariasis in Egypt and Yemen, but elimination in Sudan has been challenging. Continued mapping of areas of unknown status, followed by sustained mass drug administration initiatives, are required in Sudan. The regional target of eliminating leprosy by 2005 was achieved in 2000, when all countries reported a prevalence of below 1 case per 10 000 population at the national level.

In 2009, the regional coverage for providing the first dose of measles-containing vaccine reached 84% and approximately 384 million children have been vaccinated since 1994. Measles mortality reduced by 93% between 2000 and 2008, during which time the Region achieved the goal set by the World Health Assembly and United Nations General Assembly Special Session (UNGASS) of reducing measles deaths by 50% by 2005. The goal of the WHO–UNICEF Global Immunization Vision and Strategy (GIVS), achieving 90% reduction of measles mortality by 2010 compared to 2000 levels, was achieved three years before the target date. Although the global target of maternal and neonatal tetanus elimination was not achieved by 2005, 16 of the 22 countries in the Region had achieved elimination by the end of 2009. High-burden countries, such as Pakistan and Sudan, continue to slow the progress of obtaining global elimination.

Elimination and eradication of specific diseases

The elimination and eradication of communicable diseases are the ultimate goals of communicable disease control programmes. The eradication of a communicable disease is achieved when the global prevalence of the disease has reduced to zero and transmission of the causative agent has ceased irreversibly, thereby removing the need for ongoing control measures. The elimination of a communicable disease refers to the reduction of disease prevalence to zero within a specific region, or reduction of global prevalence to a negligible level whereby it no longer poses a public health concern. The last case of smallpox in 1977 and the subsequent endorsement of smallpox eradication in 1980 by the World Health Assembly is the only example of successful eradication of a human communicable disease. As such, global goals for the elimination and eradication of other communicable diseases are based on the experiences of smallpox eradication. At present, the eradication of polio and dracunculiasis, and the elimination of lymphatic filariasis, leprosy, measles, and maternal and neonatal tetanus are a primary focus in the Eastern Mediterranean Region. The



global and regional targets for eradication and elimination are to:

- eradicate dracunculiasis by 2009 (regional and global target)
- eradicate poliomyelitis by 2012 (regional and global target)
- eliminate lymphatic filariasis by 2015 (regional target)
- eliminate leprosy by 2005 (regional and global target)
- eliminate measles by 2010 (regional target)
- eliminate maternal and neonatal tetanus by 2005 (regional and global target).

Note. The poliomyelitis eradication programme is a special programme and progress in polio eradication is not covered by this report.

Eradication of dracunculiasis

Why is eradication of dracunculiasis important?

Eradication of dracunculiasis is a global commitment. In May 2004, at a meeting of the World Health Assembly, ministers of health from the 12 remaining endemic countries resolved to eradicate dracunculiasis by 2009. Former U.S. President Jimmy Carter of The Carter Center, the UNICEF Deputy Director and the WHO Regional Directors for Africa and the Eastern Mediterranean, pledged their support for the final phase of eradication. A resolution (WHA57.9) was adopted by the World Health Assembly.

Strategies to eradicate dracunculiasis

The global programme strategies for dracunculiasis eradication in the Region comprise four components:

- providing safe sources of drinking water.
- vector control.
- village-based surveillance.
- case containment.

The World Health Assembly in 2004 identified additional strategies that would be required to eradicate dracunculiasis in remaining areas and achieve global eradication. These included greater

involvement of political leaders and personnel at all levels of the health system in the eradication activities.

Progress towards the eradication of dracunculiasis

Although Sudan has made significant progress in eradicating dracunculiasis, the majority of cases still occur in southern Sudan. The incidence of dracunculiasis in Sudan decreased by 25%, from 3618 new cases in 2008 to 2733 cases in 2009. In addition, the case containment rate rose from 49% in 2008 to 83% in 2009. Infrastructure has been established for the guinea-worm eradication programme in newly discovered endemic areas and logistical support has been provided to allow surveillance and monthly reporting of cases. Village volunteers and supervisors were trained on case management, case containment, data collection and analysis, social mobilization activities and organization of active surveys in high-risk areas such as in Blue Nile State. Advocacy material was printed for distribution in schools and in communities. In southern Sudan, surveillance for dracunculiasis was integrated with other programmes, such as the polio eradication programme. Furthermore, sanitation has been improved for high-risk populations.

A cross-border surveillance system has been established between southern Sudan and Ethiopia. Other neighbouring countries, such as Kenya and Uganda, also participate in cross-border guinea-worm eradication programme coordination activities. Due to population movement, remaining areas of major concern include the border regions between Ethiopia and southern Sudan and between Kenya and southern Sudan. A common action plan has been developed, which aims to map existing surveillance structures in border areas and validate surveillance structures using teams from neighbouring countries. The zero case surveillance system has been implemented in all dracunculiasis-free areas of southern Sudan.

Successful eradication of dracunculiasis will involve overcoming several key challenges, including being



able to assess the status of endemicity in previously inaccessible areas of southern Sudan and providing trained personnel to implement surveillance and intervention activities. Another notable challenge includes maintaining sufficient surveillance and intervention activities in spite of the influx of returnees from different parts of the country and neighbouring countries.

Is it possible to eradicate dracunculiasis from the Region?

In 2009, all 2733 new cases of dracunculiasis that were reported in the Region were in southern Sudan. Given this, it is likely that the last case of dracunculiasis will occur in the Region. The global and regional target of dracunculiasis eradication by 2009 could not be achieved. However, through sustained and targeted efforts by the country programmes, Regional Office and associated partners, the eradication of dracunculiasis from the Region may be achieved in coming years. Our goal is clear: to eradicate dracunculiasis from southern Sudan, thereby eradicating the disease from the world.

Elimination of lymphatic filariasis

Why is elimination of lymphatic filariasis important?

A coordinated global effort to eliminate lymphatic filariasis began in 1997, when the World Health Assembly adopted a resolution (WHA50.29) on elimination of lymphatic filariasis as a public health problem. As a result, the Global Programme to Eliminate Lymphatic Filariasis was established. In May 2000, a public-private partnership known as the Global Alliance to Eliminate Lymphatic Filariasis, was established to support the programme, in particular through the donation of vital medicines. The primary goal of the global programme is to eliminate lymphatic filariasis as a public health problem by 2020. Its two main aims are interruption of transmission and prevention and alleviation of disability and suffering. The global programme is active in all WHO regions, except Europe. Efforts to eliminate lymphatic filariasis in Africa are slow, mainly due to 17 countries, including Sudan, that have not begun mass drug administration.

The Eastern Mediterranean Region contributes only 1% of the global burden of lymphatic filariasis. Lymphatic filariasis is endemic mainly in Sudan and some parts of Egypt and Yemen. Previous epidemiological surveys indicated that lymphatic filariasis is hyperendemic in four states of southern Sudan (Upper Nile, Western Equatoria, Central Equatoria and East Equatoria). In addition, questionnaire surveys showed that cases with clinical manifestations occur in Jonglei, Lakes and Warrab States. However, no information is available from the remaining two states (Western Bahr el Ghazal and Unity). The lymphatic filariasis situation of some countries in the Region remains unclear. The Region has set itself the ambitious goal of elimination of lymphatic filariasis by 2015, which would make it the first endemic region in the world to do so. In 2000, the countries of the Region developed a regional strategic plan for elimination, which outlined specific activities that each country will perform. All countries are currently working towards achieving this goal.



Strategies for elimination of lymphatic filariasis

Eliminating lymphatic filariasis is feasible due to the availability of effective medicines that can be administered on a community-wide basis and integrated with existing public health activities. MDA initiatives for lymphatic filariasis include administering a safe and effective combination of either albendazole and diethylcarbamazine (DEC) or albendazole and ivermectin, which reduces the transmission of the disease to almost zero. The global programme is promoting an integrated approach for the control and elimination of neglected tropical diseases. The key steps are:

- the mapping of lymphatic filariasis endemic settings;
- ensuring effective rounds of mass drug administration with full national coverage;
- improving community participation in treatment and morbidity control, and making a rational decision for stopping mass drug administration.

Progress in elimination of lymphatic filariasis

Lymphatic filariasis elimination in Sudan remains one of the main challenges for the Region because programmes could not be started until 2008. In 2009, the Sudan Lymphatic Filariasis Elimination Programme completed epidemiological mapping of the disease in 77 northern localities. Of the 15

states in northern Sudan, 12 were mapped and all are partially lymphatic filariasis endemic. The remaining states could not be mapped due to the current conflict situation.

In preparation for mass drug administration activities and to collect baseline data, the Sudan Lymphatic Filariasis Elimination Programme carried out night blood surveys in two villages (sentinel sites), in Abu Gebeha (South Kordofan) and in Elrosaris (Blue Nile). A total of 90 health workers from the three eligible localities (Abu Gebeha, Elrosaris and Abu Hamad) were trained on MDA activities during 2009. The malaria control programme is responsible for vector control measures, including long-lasting insecticide-treated nets (LLINs), indoor residual spraying and *Anopheles* larval control. During 2008–2010 more than 6.4 million LLINs were distributed in the 15 northern states of Sudan, through the Global Fund and UNICEF. Limited financial resources, a lack of transportation necessary for facilitating MDA activities, a lack of programme monitoring and evaluation, and weak political commitment at the state level are major constraints.

The Egypt Lymphatic Filariasis Elimination Programme started in 2000 by distributing DEC and albendazole to at-risk populations (approximately 2.5 million people) residing in 161 villages located in seven governorates of the Nile Delta. In 150 villages, mass drug administration was stopped after five effective rounds. In the sixth round (implemented in January 2006), 40 villages were treated. In the following round, 28 villages were treated. The last new eligible village was added in the eighth round (implemented in 2007). In the tenth and most recent round, implemented in February 2010, approximately 500 000 people residing in 29 villages (in eleven districts located in five governorates) were treated. Currently the programme is facing several challenges including lack of the financial resources required for sustainability.

The Lymphatic Filariasis Elimination Programme in Yemen started using the infrastructure of the national programme for leprosy. The last monitoring of microfilaraemia and antigenaemia

in 2008 indicated that the goal of elimination had been achieved after five rounds of mass drug administration in all of the implementation units in mainland Yemen. In Socotra Island, microfilaraemia prevalence decreased to 0.5%, while a cluster survey in children (6–8 years old) revealed an antigenaemia prevalence of 1.8% after seven MDA rounds. Therefore, further mass drug administration activities were continued in 2009. Intensive vector control was carried out in Socotra Island and integrated well with the malaria programme. Vector control activities during 2007–2009 included the distribution of 32 500 impregnated bed nets. The main constraints facing the programme in Yemen include the low priority of lymphatic filariasis elimination relative to other endemic diseases, poor compliance to collection of night smears, poor compliance of preschool children, technical problems (short duration, storage conditions, doubtful results), and insufficient financial support.

At present, no definitive status of lymphatic filariasis endemicity is available for Saudi Arabia. The Regional Office is planning to carry out surveys (questionnaire and/or serological) to verify the lymphatic filariasis situation in suspected areas where cases of lymphoedema have been reported.

The pharmaceutical company GlaxoSmithKline has continued to supply lymphatic filariasis medicines. At the end of 2008, over 1.4 billion treatments had been donated to 50 countries. Of these, 2% were donated to countries in the Eastern Mediterranean Region. By the end of the global lymphatic filariasis elimination programme, it is anticipated that the value of donated medicines will be about 1 billion US dollars.

Is elimination of lymphatic filariasis possible?

Significant progress has been made in eliminating lymphatic filariasis in two of three endemic countries in the Region. Lymphatic filariasis has been eliminated from most areas of Egypt and Yemen, however, sustained mass drug administration activities and post-mass drug administration

surveillance are still required. Mapping of villages with unknown status should also be completed. In Egypt, focus needs to be placed on building capacity to carry out epidemiological surveillance, which is essential for the monitoring and evaluation of mass drug administration activities. In addition, more effort needs to be placed on alleviating the suffering of chronic lymphatic filariasis patients. With increased political commitment and sustained programme efforts the elimination goal in Egypt and Yemen can be achieved.

Lymphatic filariasis elimination in Sudan remains a major challenge. Despite the recent progress in northern Sudan, knowledge about the distribution and burden of the disease in southern Sudan is still unknown. Although mapping in the southern part is in progress, mass drug administration in Sudan has not started. Mapping in southern Sudan has been hampered by political and security issues. Various partners working in Sudan need to join efforts to increase the scale of the two lymphatic filariasis elimination programmes. Mappings should be completed soon and mass drug administration should be piloted in selected states. The target of regional lymphatic filariasis elimination by 2015 is attainable if a strong elimination programme can be established.



It is unfortunate that the global strategy for lymphatic filariasis elimination has not made use of vector control interventions especially where the vectors are the same as those for malaria. In the latter disease, vector control has contributed significantly to reducing morbidity and mortality.

Elimination of leprosy

Why is elimination of leprosy important?

Approximately 5000 leprosy cases exist in the Region and around 3800 new cases occur every year. The global goal of leprosy elimination aimed to eliminate the disease as a public health problem at the national level in all countries by 2005. Elimination was defined as attaining a prevalence of below 1 case per 10 000 population. This target was achieved in all countries of the world by 2002, and the focus was shifted to achieving this goal at the district level in each country. In the Eastern Mediterranean Region, all countries had reached a prevalence of less than 1 per 10 000 population by 2000. Following this, the goal of elimination at the sub-national level (state, governorate or province) was achieved in the majority of endemic countries. Therefore, the regional goal is now to eliminate leprosy at the district level by 2005 and further reduce its transmission.

Strategies to eliminate leprosy

Elimination of leprosy was achievable because an effective and safe treatment was available. Early diagnosis and multidrug treatment are the main elimination strategies. Drugs for multidrug treatment are provided by the WHO free of charge. If the disease is detected early, it can be halted before irreversible changes occur. This requires a high-level of commitment by health-care workers to detect the initial traces of the disease and to begin treatment immediately. Multidrug treatment is safe and effective, works within months and usually means resistance can be avoided.

Progress in elimination of leprosy

The Region has already achieved leprosy elimination at the national level, and will soon achieve elimination at the district level. Regional leprosy incidence declined from 4665 cases in 2002 to 3820 in 2009. The prevalence increased from 4240 in 2008 to 4967 cases in 2009. This increase can be attributed to improvements in the reporting system and stronger operational coordination between the national programme and implementing partners, such as nongovernmental organizations.

Recently, the capacity of countries has been improved, resulting in strengthening of leprosy control activities. The provision of multidrug treatment has also been improved. The Region finalized the strategic and operational components of the enhanced global strategy for further reducing the disease burden due to leprosy 2010–2015 in 2009. The Pakistan national leprosy programme was linked to the global network for multidrug-resistant leprosy.

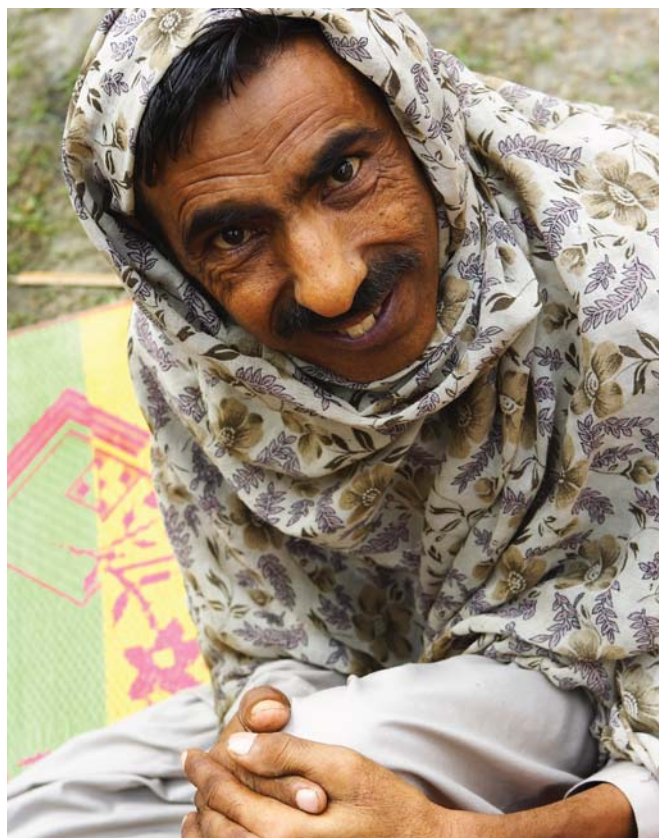
Is elimination of leprosy possible?

The regional target to eliminate leprosy by 2005 was achieved in 2000 when all countries in the Region reached a prevalence level of below 1 case per 10 000 population at national level. To date, most of the endemic countries in the Region have also achieved the elimination target at the sub-national level (state, governorate or province). As a result, the Region is now aiming to further reduce transmission rates and eliminating leprosy at the district level.

Elimination of measles

Why is elimination of measles important?

Measles is one of the leading causes of death among young children. Globally, 281 972 measles cases were reported in 2008, and there were an estimated 164 000 measles deaths globally during the same year. Measles vaccination resulted in a 78% drop in measles deaths



between 2000 and 2008 worldwide. In 2009, about 82% of the world's children received one dose of measles vaccine by their first birthday through routine health services. Measles is a disease of poverty. Malnourished children are especially at risk of infection and more than 95% of measles deaths occur in low-income countries with weak health infrastructure. Many deaths from the measles virus are directly related to complications, including pneumonia, diarrhoea and malnutrition.

The fourth MDG aims to reduce the under-five mortality rate by two-thirds between 1990 and 2015. Recognizing the potential impact of measles vaccination to reduce child mortality, and given that measles vaccination coverage can be considered a marker of access to child health services, routine measles vaccination coverage has been selected as an indicator of progress towards achieving MDG four. In 2002, the World Health Assembly and United Nations General Assembly Special Session (UNGASS) set a target to reduce measles deaths by 50% by 2005 compared to levels in 1999. In 1999, the WHO estimated that 104 000 deaths occurred each year due to measles in the Eastern Mediterranean Region.

This target was achieved in the Region. The goal of the WHO-UNICEF Global Immunization Vision and Strategy (GIVS), achieving 90% reduction of measles mortality by 2010 compared to 2000 levels, was also achieved by the Region three years before the target date.

Regional strategy for measles elimination

Measles elimination is defined as a dynamic situation in a large and well-populated geographic area in which endemic measles transmission does not occur, and where sustained transmission does not occur following the reintroduction of measles virus by an imported case. During the forty-first session of the Regional Committee for the Eastern Mediterranean (1997), the Regional Committee passed a resolution to eliminate measles by the year 2010. In 1999, Member States in the Region developed a five-year plan for measles elimination, based on the WHO-UNICEF joint strategy for measles mortality reduction. This plan has evolved over time and currently includes the following key elements:

1. Achieving high vaccination coverage (95% coverage in all districts) with two doses of

measles-containing vaccine by: a) routine vaccination for the first dose of measles-containing vaccine; b) routine second dose, or routine second dose and follow-up supplementary immunization activities, to be conducted until the routine second dose reaches the high coverage required (95% in all districts);

2. Strong case-based and laboratory-based surveillance for measles;
3. Optimal case management.

Progress in elimination of measles

The Region has made substantial progress towards measles elimination since 1997, when all countries in the Region resolved to eliminate measles by 2010. In 2009, the regional coverage with the first dose of measles-containing vaccine reached 84% (Figure 1) and approximately 384 million children in the Region were vaccinated through supplementary immunization activities between 1994 and 2009. The number of confirmed measles cases decreased dramatically from about 88 000 in 1998 to 15 800 in 2009 and measles mortality decreased by 93% between 2000 and 2008 (Figure 2).

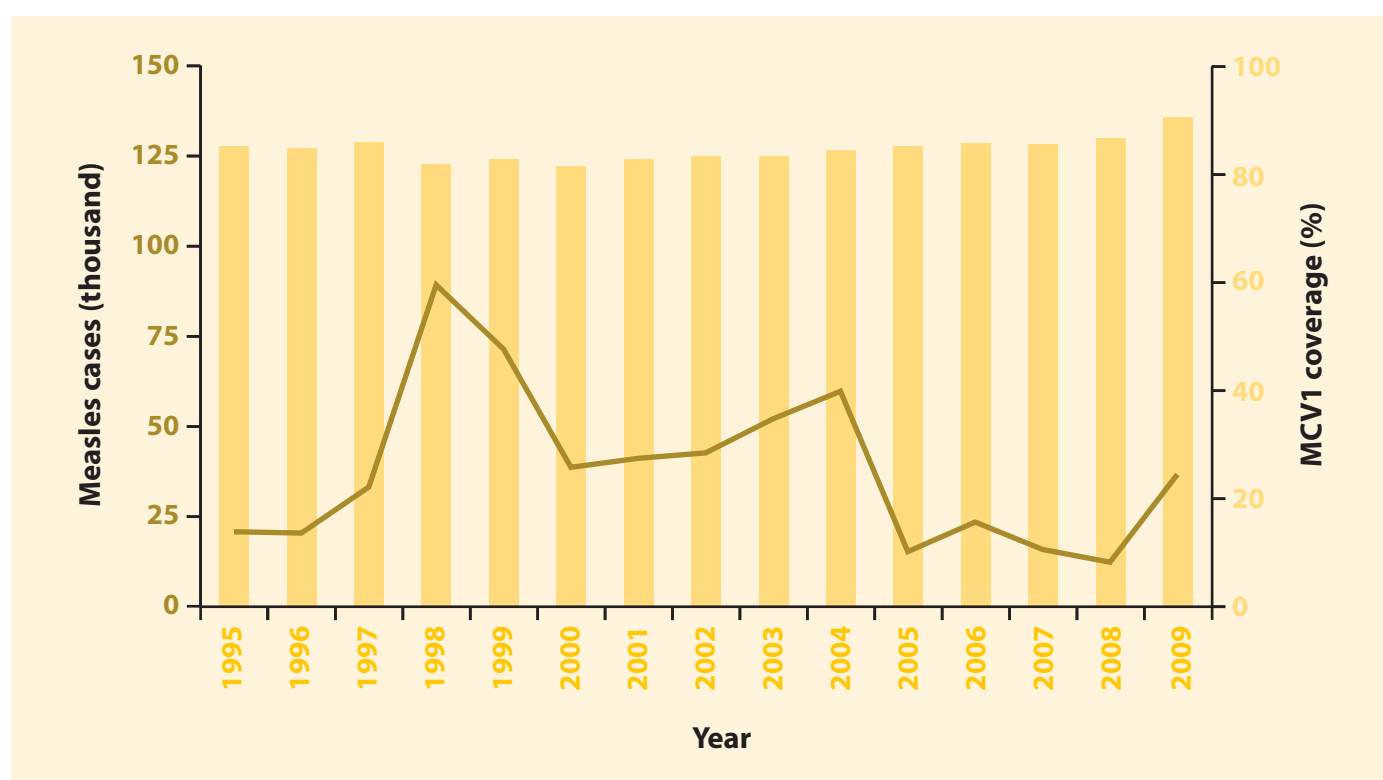


Figure 1

Number of measles cases and immunization coverage in the Eastern Mediterranean Region, 1995–2009

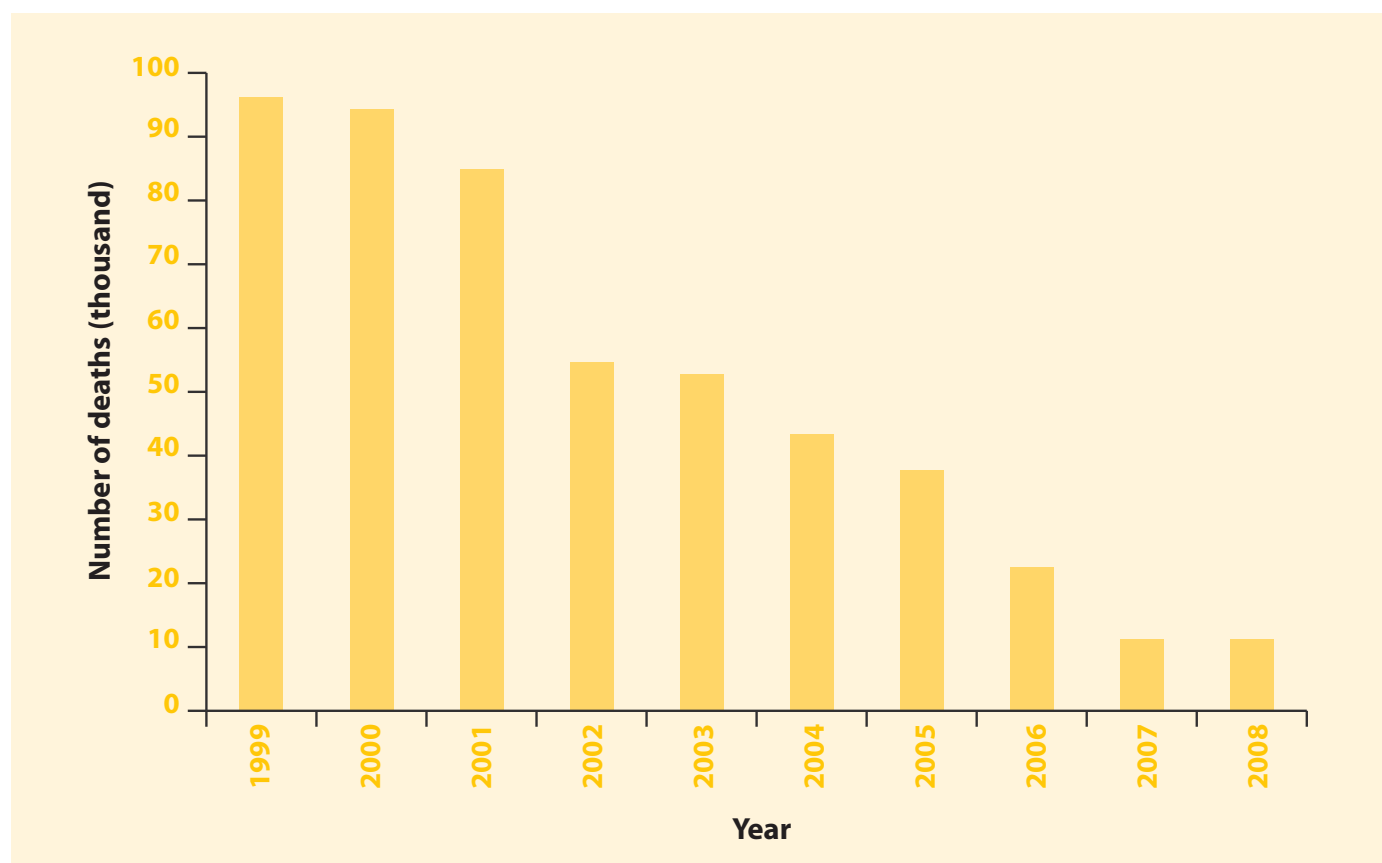


Figure 2

Measles deaths in the Eastern Mediterranean Region, 1999–2008

Measles vaccination coverage

Of the 22 countries in the Region, 19 (86.4%) provided two routine doses of measles vaccine and four (Afghanistan, Iraq, Pakistan and Yemen) are still conducting follow-up campaigns to supplement the lower coverage. Three countries (Djibouti, Sudan and Somalia) provide only one routine dose and the second dose is provided exclusively through measles follow-up campaigns.

Considerable progress has been made in lowering measles mortality in Pakistan (40% of the Region's population) through a nationwide measles catch-up campaign that targeted over 65 million children aged between 9 months and 13 years. Four phases were completed, reaching over 31 million children with coverage of 98%. The last phase was conducted in March 2008 and targeted over 34 million children. Egypt conducted a nationwide catch-up campaign in two phases during 2008–2009. The campaign targeted 36 million people aged 2–20 years, regardless of their vaccination history and reached a coverage level

above 95%. Similar measles catch-up campaigns were completed in Somalia, Sudan and Yemen. Financial support of the measles initiative was instrumental in conducting the catch-up campaigns and the follow-up campaigns in the low-income countries of the Region.

Iraq, Yemen and Somalia conducted measles follow-up supplementary immunization activities in 2009. Iraq conducted a measles campaign to respond to the outbreak that began in 2008. The campaign was conducted in two phases; phase one in October 2009 targeted children aged six months to 5 years and phase two in December 2009 targeted children aged 5–12 years. During the first phase of the campaign, 4.5 million of the target population were reached (97.5% coverage) and in phase two, 5.4 million of the target population were reached (90.7% coverage).

In January 2009, Yemen conducted measles follow-up supplementary immunization activities in four governorates that had experienced flood and conflict (Hadramawt, Al Mahrah, Al Hudaydah

and Sa'dah). A total of 621 671 children aged 9 months to 5 years were vaccinated with a coverage of 93%. In December 2009, a nationwide measles follow-up campaign was conducted in Yemen in combination with the administration of polio vaccine and vitamin A. A total of 3 246 804 children of a target population of 3 384 519 children were vaccinated (95.8% coverage). Other measles follow-up campaigns were completed in Afghanistan, Somalia (Box 1) and southern Sudan. The Accelerated Child Survival Initiative was conducted by UNICEF in Sudan, for vaccination of measles and tetanus, and de-worming in children under 5 years. Child health days were conducted for children who were older than 5 years. Mother survival interventions were conducted in Somalia. Considerable resources were mobilized by the measles partnership through the United Nations Foundation, with technical support provided by WHO and UNICEF.

Improving measles surveillance

For most countries in the Region, measles surveillance has been intensified through catch-up campaigns, emphasizing case reporting and laboratory

confirmation of suspected cases. All countries have demonstrated a significant improvement in the handling and sharing of measles surveillance and laboratory data in the last few years. By 2006, all countries were reporting measles and rubella data to the Regional Office on a monthly basis. Case-based measles surveillance was established in 19 of 22 countries. Given the similarities in the clinical symptoms, epidemiological investigation, and laboratory studies, measles and rubella surveillance were integrated in the Region. Measles surveillance is suboptimal in Pakistan, Morocco, Somalia, southern Sudan and Lebanon. The Regional Office is supporting Pakistan and Morocco to implement a nationwide measles surveillance system. This includes the development of guidelines, training activities and laboratory support. In Somalia and southern Sudan, a lack of human resources, equipment and logistics are the main factors for low performing measles surveillance.

The regional laboratory network has made considerable progress. Since 2005, all countries in the Region have expanded and established a national measles/rubella laboratory with full serology capacity. In addition, 17 countries have measles virus isolation or detection capacity and four countries have virus sequencing capacity,

Box 1

Measles elimination efforts in Somalia

Somalia conducted two rounds of child health day activities in 2009. To respond to the immediate needs of vulnerable populations and to increase coverage and equity of access to basic health interventions, WHO and UNICEF have coordinated their contribution to implement the Accelerated Young Child Survival strategy. The strategy was implemented using three delivery mechanisms; health facility-based, community-based and mobile child health services. The goal of child health days is to increase coverage and maintain delivery of key high-impact health interventions to as many children as possible. The child health days are a component of the Accelerated Young Child Survival strategy and were designed around the measles follow-up campaign in which children aged 9–59 months were immunized for measles, irrespective of their previous history of vaccination. However, the child health day package also included three doses of diphtheria, pertussis and tetanus vaccine (DPT3), oral polio vaccine, tetanus toxoid, vitamin A supplements, oral rehydration solution, Aqua Tabs for water purification, and de-worming medication (albendazole). Child health days were implemented twice in 2009. Mobile fixed-post campaigns targeted 1.6 million children aged less than five years in both rural and urban areas, including hard-to-reach and security compromised areas. From 2008 to 2009, reported measles vaccination coverage had increased from 20% to 61% in Galguduug (central region), from 55% to 75% in Bakool (south region) and from 43% to 66% in Jubaland (south region). These efforts have resulted in a reduction of measles cases from 12 008 cases in 2004 to 1360 cases in 2009.

two of which are regional reference laboratories in Tunisia and Oman. The Region has improved its virological surveillance for measles and rubella by initiating baseline virological surveillance in most countries. Measles genotypes C2, B3, D4, D5, D6, D7, D8 and H1 have been detected in the Region. The D4 genotype is most prevalent and has been detected in 14 countries in the Region. Rubella genotypes 1E, 1G and 2B have been detected in all seven countries that have submitted rubella strains for analysis.

Towards the elimination of measles

Significant progress has been made to eliminate measles in the Region. Eight countries are approaching measles elimination and the Regional Office is currently developing guidelines to validate measles elimination. The achievement of reaching the measles mortality reduction target three years ahead of schedule highlights the importance of having country-level political commitment and an effective international partnership.

Achieving measles elimination requires achieving a very high and sustained level of measles vaccination



coverage and improving measles surveillance. We must now build on the success and ensure that every child is adequately vaccinated and protected against measles. The Region can achieve measles elimination, but it might not be possible in 2010. Some countries still experience measles outbreaks, including Iraq, Afghanistan, Somalia, southern Sudan and Pakistan. Conflict and insecurity, funding for follow-up campaigns, inadequate surveillance, other competing priorities, and stagnating or uneven routine coverage are the main challenges. National ownership and allocation of necessary resources together with continuous support of the international funding partners is essential.

Elimination of maternal and neonatal tetanus

Why is elimination of maternal and neonatal tetanus important?

In 2004, an estimated 128 000 newborns died of neonatal tetanus. While recent estimates for 2008 indicate that neonatal tetanus mortality has reduced to 59 000 deaths, it is still responsible for about 1% of deaths worldwide (Black et al, 2010). Of the 16 644 cases of tetanus that were reported in 2008, about 40% (6658 cases) occurred in neonates. In the Eastern Mediterranean Region, 1059 cases were reported during 2009, of which almost 90% of cases were reported from Pakistan and Sudan.

Tetanus vaccination is routinely administered to children as part of the combination vaccine DPT3, through the Expanded Programme on Immunization (EPI). Continuing immunization is needed to protect mothers and children even after elimination has been achieved. Tetanus spores are widespread in the environment, surviving in dirt and human and animal faeces and can be transmitted without human contact.

The global goal to eliminate maternal and neonatal tetanus by 2005 was set by WHO, UNICEF and UNFPA in 1999. However, the target was not achieved and a new target date was not set.

Nonetheless, countries are encouraged to achieve maternal and neonatal tetanus elimination as soon as possible. Elimination of maternal and neonatal tetanus is defined as achieving an incidence of less than 1 case per 1000 live births in each district of every country. This wider vision is reflected in a change from targeting pregnant women for vaccination to targeting adolescent girls and women of child-bearing age.

Strategies for eliminating maternal and neo-natal tetanus

The strategies recommended to achieve the goal of maternal and neonatal tetanus elimination include:

- strengthening of routine immunization and implementation of SIA, targeting women of child bearing age with three properly spaced doses of tetanus toxoid in selected high-risk areas;
- neonatal tetanus surveillance;
- promotion of clean deliveries.

Progress towards the elimination of maternal and neonatal tetanus

At the end of 2009, 16 countries had achieved maternal and neonatal tetanus elimination, including Egypt whose elimination status was validated in 2007. Afghanistan, Iraq, Pakistan, Somalia, Sudan and Yemen did not achieve the elimination target. All countries have initiated and expanded their tetanus toxoid supplementary immunization activities between 2005 and 2009. In Somalia, tetanus toxoid vaccination is being provided during child health days. Joint WHO/UNICEF missions visited Afghanistan, Pakistan and

Yemen to discuss the constraints of the maternal and neonatal tetanus elimination strategy and develop national plans to address its different components and identify high-risk districts for tetanus toxoid supplementary immunization activities (Table 1).

Supplementary immunization activities were planned for these countries, in addition to strengthening routine EPI and reducing the gap between DPT3 and tetanus toxoid coverage. The planned supplementary immunization activities have been conducted since 2008, however, a lack of funding has caused the original plan to be modified. As a result, the strategy for high-risk districts involved performing three rounds of supplementary immunization activities and two rounds for intermediate-risk districts, ensuring that the entire district was sufficiently covered.

Is elimination of maternal and neonatal tetanus possible?

The global target for eliminating maternal and neonatal tetanus by 2005 was not achieved. Despite 16 countries in the Region having reached elimination by 2009, the high burden countries are showing slow progress. Maternal and neonatal tetanus surveillance is weak in most of these countries and the precise burden of disease cannot be measured. Therefore, routine childhood immunization should be improved and all activities must include tetanus toxoid immunization of child-bearing age women. For those countries that have achieved the target, maintaining elimination status requires further strengthening of routine immunization activities, surveillance and increased access to clean delivery practice.

Table 1

Identification of high-risk districts for tetanus toxoid supplementary immunization activities

Country	District category		
	High-risk	Intermediate-risk	Low-risk
Afghanistan	12	91	191
Pakistan	41	36	56
Yemen	225	59	49

Source: Joint WHO/UNICEF mission findings.



Vision 2

Expanding disease-free areas

Our vision is to expand areas that are free of malaria, schistosomiasis and leishmaniasis, and achieve a region free of onchocerciasis and trypanosomiasis. This will dramatically reduce the burden of these painful and often fatal diseases in the Region.

Vision 2

Summary

Thirteen countries of the Region are free from malaria, yet the disease remains endemic in nine countries. Of these endemic countries, three are approaching elimination, Iraq, Islamic Republic of Iran and Saudi Arabia. While countries are implementing critical programmes at national level, subnational projects for freeing certain geographic areas from malaria are under way, such as in Sudan and Yemen. A specific project to eliminate the fatal falciparum species is being supported in some northern provinces in Afghanistan. About 95% of malaria cases occur in Afghanistan, Djibouti, Pakistan, Somalia, Sudan and Yemen. Sudan alone accounts for more than 60% of the total estimated regional cases. The malaria burden is decreasing gradually and coverage with key interventions is improving. However, it is still substantially below the target of universal coverage by 2010, as outlined in the Roll Back Malaria initiative.

In the Eastern Mediterranean Region, schistosomiasis is mainly endemic in Somalia, Sudan and Yemen. Encouraging progress has been made in Yemen where a national schistosomiasis elimination campaign was launched in 2008, which has provided treatment to 2.4 million school-aged children. The sustained control and elimination of schistosomiasis remains a challenge in Somalia and Sudan. Somalia continued to receive support from the Regional Office for case detection and treatment campaigns and drug provision for MDA.

The Region's leishmaniasis control programmes aim to expand disease-free areas and decrease morbidity and mortality in endemic countries (Iraq and Sudan). Leishmaniasis outbreaks in several countries highlighted that countries with unstable environments and weak health systems have a reduced capacity to respond rapidly to the outbreaks, but also face difficulties in ensuring case management on a regular basis. In the Region, human African trypanosomiasis is only endemic in southern Sudan. The Regional Office supported trypanosomiasis centres by providing specific medicines and reagents for screening, diagnosis and treatment of the disease. The WHO has produced a comprehensive database to map trypanosomiasis in Africa at the village level for the last ten years (2000–2009).

Expanding malaria-free areas

Why is expanding malaria-free areas important?

In the Eastern Mediterranean Region, about 55% of the population (295 million) lives at risk of contracting malaria. In 2008, there were an estimated 8.1 million cases of malaria (76% *P. falciparum*) and 38 000 deaths occurred, ranking the Region third after Africa and South-East Asia. Malaria is endemic in nine countries of the Region (Figure 3). In three (Islamic Republic of Iran, Iraq and Saudi Arabia) transmission is focal and elimination is targeted. Most cases of malaria in the Region (95%) occur in Afghanistan, Djibouti, Pakistan, Somalia, Sudan and Yemen. Sudan alone accounts for more than 60% of the total estimated regional cases. The intensity of transmission is low in most malarious areas, while high and stable transmission is limited to the southern zone of Somalia and southern Sudan, which represents only 5% of the at-risk population in the Region. *P. falciparum* malaria is the dominant species in Saudi Arabia, Yemen and the sub-Saharan countries of the Region (Djibouti, Somalia and Sudan), while in Afghanistan, Islamic

Republic of Iran and Pakistan, *P. falciparum* is present but *P. vivax* is the predominant species. The majority of surveys that were conducted during 1985–2007 showed an overall *P. falciparum* prevalence rate of below 10%.

The vision of the global Roll Back Malaria partnership is to achieve a world free from the burden of malaria. In doing so, it hopes that by 2015, the malaria-specific MDG is achieved, and malaria is no longer a major cause of mortality and no longer a barrier to social and economic development and growth anywhere in the world. The MDGs included the more modest target to halt and reverse the incidence of malaria by 2015. The regional objectives by 2015 are:

- to prevent re-establishment of malaria transmission in areas where there is no transmission;
- to interrupt malaria transmission in 50% of endemic districts in areas with limited focal transmission;
- to continue reducing the incidence of malaria such that by the end of 2015, levels are 75% less than in 2000.

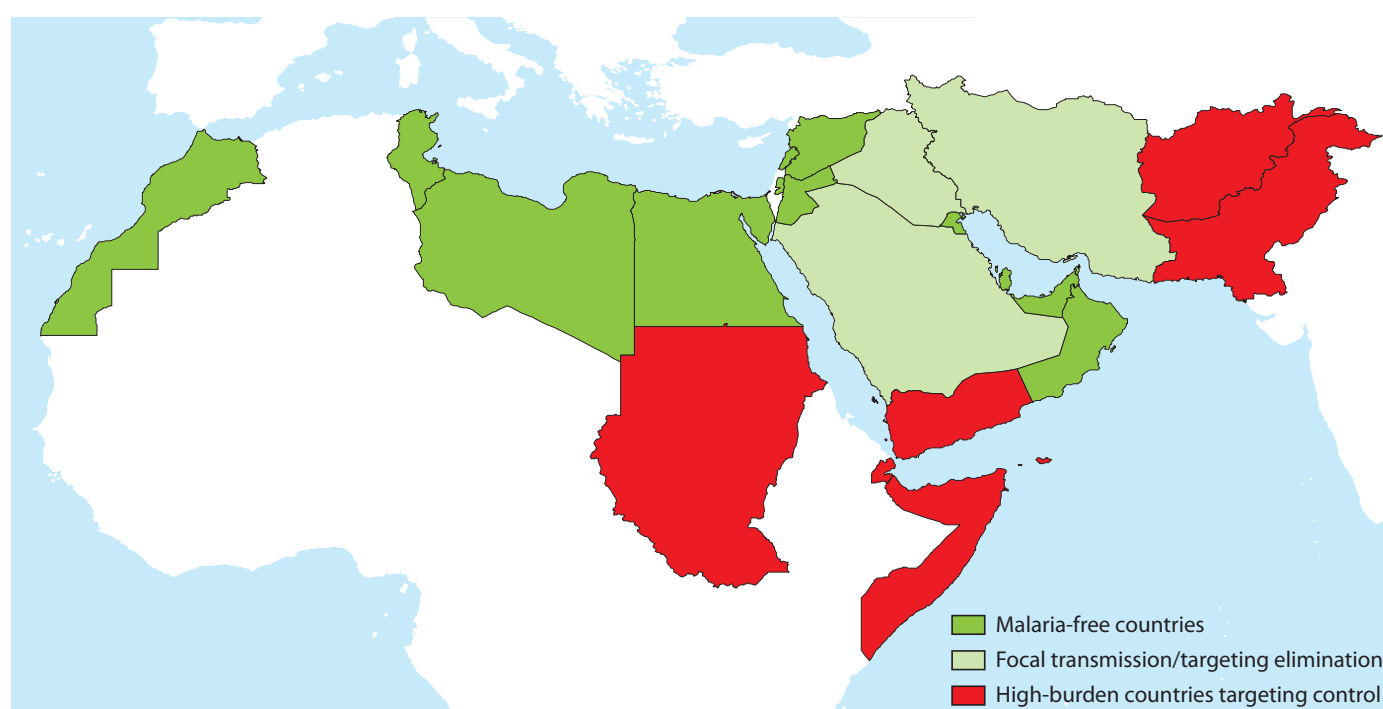


Figure 3

Epidemiological situation of malaria in the Eastern Mediterranean Region

Strategies for expanding malaria-free areas

The following strategic approaches have been adopted by the Region and form the basis of the malaria strategic plan 2011–2015. The strategy aims to:

- ensure universal access to quality case management for populations at risk of contracting malaria;
- promote and facilitate universal access to effective preventive measures against malaria
- support prevention and control of malaria in epidemics and complex emergency situations;
- support countries to strengthen the capacity of malaria control programmes at national and district level in partnership with all relevant agencies;
- strengthen malaria surveillance, monitoring and evaluation systems;
- support operational research on different aspects of malaria control and elimination.

Progress towards creating malaria-free areas

Since the launch of the Roll Back Malaria initiative in the Region in 1999, and particularly in the past few years, malaria control activities have intensified in endemic countries and resulted in a reduction of the malaria burden. The estimated malaria morbidity decreased from 15 million in 2000 to 8.1 million in 2008. Estimated figures show up to 43% reduction of the regional malaria incidence in the period 2000–2008. Similarly, estimated mortality in the Region reduced from 59 000 to 38 000 in 2008.

Of the 22 countries in the Region, Bahrain, Egypt, Jordan, Kuwait, Lebanon, Libyan Arab Jamahiriya, Morocco, Oman, Palestine, Qatar, Syrian Arab Republic, Tunisia and United Arab Emirates are malaria free. Malaria is still endemic in Afghanistan, Djibouti, Pakistan, Somalia, Sudan, Yemen, Islamic Republic of Iran, Iraq and Saudi Arabia. The Islamic Republic of Iran, Iraq and Saudi Arabia have a low malaria burden with malaria limited to certain areas. The malaria control programmes have been effective in these countries and they are approaching elimination. Iraq is particularly close to the elimination stage. Iraq adopted a malaria elimination strategy in 2005 and has achieved a significant reduction in the number of cases, with only 23 local transmissions reported in 2006, 4 in 2008 and 0 local cases in 2009 (Box 2). Significant reduction of malaria cases in Saudi Arabia was recorded in recent years. The number of locally transmitted cases in Saudi Arabia decreased from 204 in 2005 to 58 in 2009. The Islamic Republic of Iran reported a significant decrease in the number of locally transmitted malaria cases, from 14 396 in 2005 to 4477 in 2009 (70% reduction).

The Regional Office provided technical support to national programmes to build their capacity for effective malaria control and prevention. Capacity-building in malaria control is supported with regional courses conducted in Islamic Republic of Iran, Oman, Sudan and Yemen, on programme planning, malaria microscopy, case management, entomology and vector control, and rapid diagnostic tests. The Regional Office also contributed assistance for human resource development and mobilization of resources for malaria control activities in endemic countries.

Box 2

Malaria elimination in Iraq

Iraq is on the verge of malaria elimination with no local cases in 2009. Routine vector surveys are carried out at 10 stations in each governorate, where 10–20 observation visits occur monthly. Indoor residual spraying was carried out in targeted areas in two rounds, spraying 34 978 house structures with coverage of more than 96%. In the same period, more than 6 million people were protected by space spraying and 250 000 breeding sites were treated by larviciding activities. In collaboration with the leishmaniasis control programme, 520 000 LLINs were made available to the targeted population.

Improving malaria control in endemic countries

Afghanistan, Djibouti, Pakistan, Somalia, Sudan and Yemen contributed to around 95% of malaria cases in the Region during 2005–2009. Despite increases in the coverage for preventive, diagnosis and treatment measures during that time, high-burden countries remain far from providing universal coverage. All malaria-endemic countries have a strategic plan for malaria control and elimination. Access to artemisinin-based combination therapy (ACT) increased, although levels remain far below the target. All malaria falciparum endemic countries have updated their treatment policies to provide ACT as standard treatment and free-of-charge at public health facilities.

Afghanistan has mobilized significant resources for malaria control in recent years from the Global Fund, United States Agency for International Development (USAID) and Government of France. The national strategic plan 2008–2013 was created and included updated treatment guidelines. Diagnostic facilities

were strengthened with the establishment of 14 quality assurance centres and 101 microscopy facilities in basic health centres. Despite these initiatives, laboratory confirmation of malaria diagnosis is low, with only 17% of reported malaria cases being confirmed in 2009. About 1.6 million LLINs were distributed between 2007 and 2009. Entomology units were established in national malaria control programmes and coordination with other sectors was strengthened. Surveillance system improvements have taken place allowing 735 health facilities and 9500 health posts to report malaria cases.

In Djibouti, the national strategic plan 2006–2010 was finalized and malaria drug policy changed with the introduction of ACT. In 2008, 3568 malaria cases were reported, however, only 3% could be confirmed. More than 227 000 LLINs were distributed between 2007 and 2009.

In Pakistan, total malaria cases in 2008 (clinical and confirmed) were 4.5 million. Only 104 454 (2.2%) cases were confirmed, of which 24% were due to *P. falciparum*. The main achievements in recent years include:

- a ban on artesunate monotherapy;
- creating a technical advisory committee at the national level;
- distributing about 1.8 million LLINs between 2007 and 2009;
- providing support to earthquake and flood-affected districts between 2007 and 2008.

Somalia's capacity to effectively monitor malaria requires significant strengthening, as evidenced by the disparity between estimated and reported cases of malaria. In 2008, there were an estimated 600 000 cases of malaria, however, only 24 136 cases were reported, along with only 21 deaths. The reported malaria parasite prevalence in Somalia in 2007–2008 ranged from between 0% to more than 19%. Some of the achievements in Somalia included:

- improving capacity of entomology technicians through the regional Master of Science degree course in medical entomology and vector control in Sudan;



- establishing four referral laboratories and providing continuous supplies to 60 peripheral laboratories;
- supporting operational research and risk mapping in three zones;
- implementing indoor residual spraying for vector control in epidemic-prone areas in the north-west zone and extending activities to selected villages in the central and southern zones;
- distributing about 1.3 million LLINs between 2007 and 2009.

A high degree of ACT coverage was achieved in Sudan by providing the treatment in 90.8% of target health facilities. Home management of malaria was implemented in 150 villages, reaching a population of 450 000. Major achievements include treating 3.07 million malaria episodes using effective antimalarial drugs and implementing a large malaria project involving 97 hospitals that are mainly located in high-burden areas. LLINs were provided to 97% of the 2008 target group which represented about 44% of the target set for 2012. More than 10.8 million LLINs were distributed in Sudan between 2007 and 2009. Malaria incidence is underreported in Sudan due to insufficient surveillance systems. Data from southern Sudan is particularly unreliable and does not represent the true burden of disease in this region.

The greatest burden of malaria in the Arabian Peninsula occurs in Yemen. In an effort to reduce the burden of malaria, the national malaria control programme implemented an integrated malaria control strategy of case management, vector control, including LLINs, indoor residual spraying, larviciding and community health education. An estimated 1.5 million people have been protected through the distribution of 725 285 LLINs since 2006. In 2008, a pilot malaria home management project was implemented in two districts with functioning basic development needs projects with the support of Kuwait Patient Helping Fund Society. In order to strengthen malaria monitoring, evaluation and surveillance, a fully-fledged monitoring and evaluation unit is being established. In 2009, the total number of clinically diagnosed and confirmed cases was more than 138 000.



Integrated vector management

Most countries in the Region have developed integrated vector management plans in response to a Regional Committee resolution (EM/RC52/R.6) and have established national intersectoral coordination mechanisms. Four countries have a vector control unit responsible for all vector-borne diseases. Indoor residual spraying and the use of insecticide-treated nets are the key interventions for the prevention of vector-borne diseases in the Region. In the absence of any other vector control intervention, the goal is universal access to LLINs (one net for every two persons). Where LLINs are a strategy for malaria control and prevention, countries have made good progress in scaling-up this intervention. Over the past few years, the number of people accessing this intervention in the Region has increased from 6 million in 2006 to approximately 33.5 million people in 2009 (Figure 4). The biggest challenge that countries of the Region face in relation to the scaling-up of these interventions is the spread of vector resistance to insecticides, especially to pyrethroids.

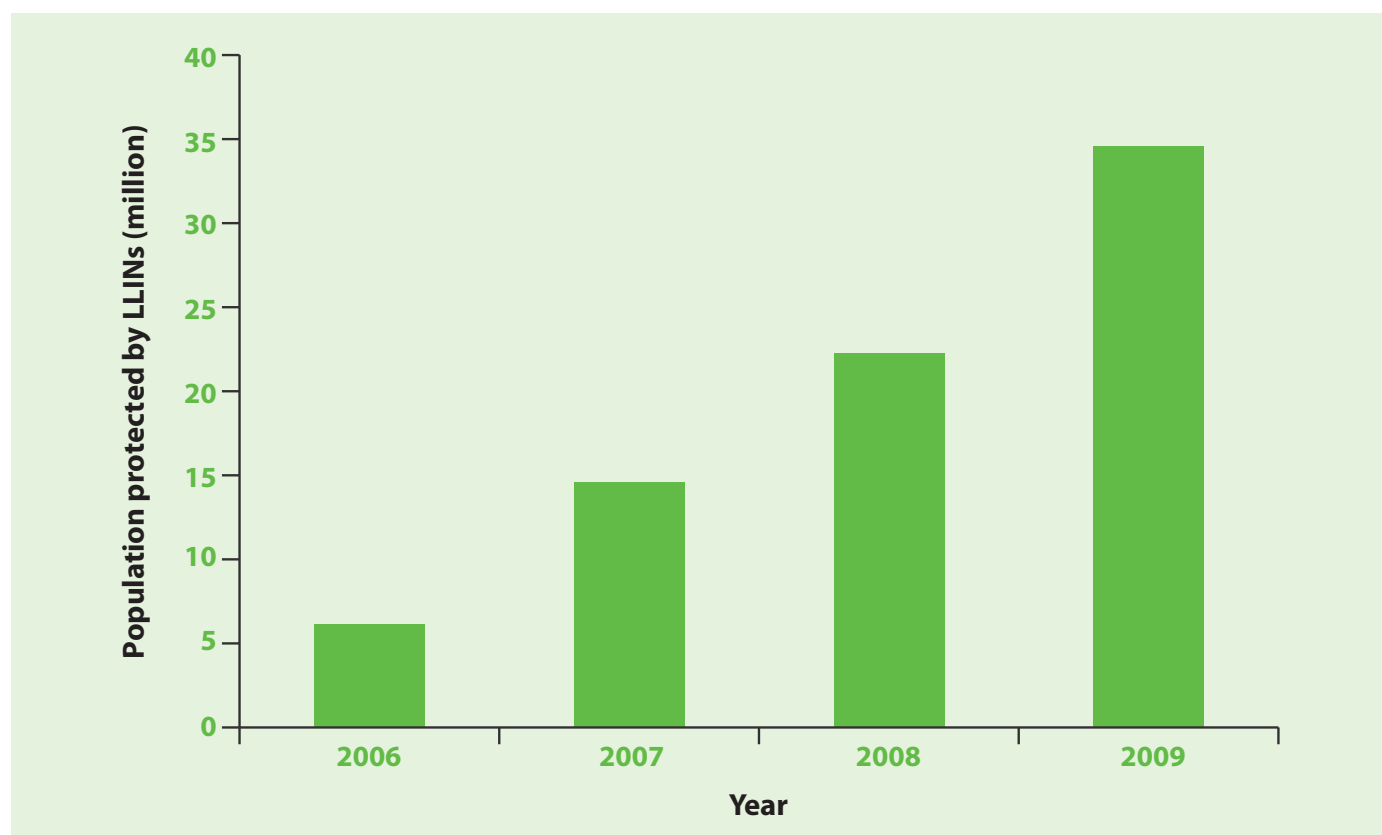


Figure 4

Number of people protected by long-lasting insecticide-treated nets in the Eastern Mediterranean Region, 2006–2009

Improving diagnostic services

Malaria diagnostic services are being improved in the Region allowing prompt and quality diagnosis of malaria. During 2008–2009, malaria endemic countries started to use rapid diagnostic tests on a large scale in areas where malaria microscopy was not possible. Somalia, Sudan and Afghanistan are expanding malaria microscopy. Strengthening parasitological diagnosis of malaria will lead to rational and effective use of precious antimalarial medicines.

Malaria control in border areas

The slogan of World Malaria Day 2008, Malaria – a disease without borders, highlighted the impact that increased population movement has on border malaria. Afghanistan, Islamic Republic of Iran and Pakistan established a network for cooperation named PIAM-NET. The key achievements of this network include:

- establishing functioning sentinel sites for the monitoring of antimalarial drug efficacy;
- conducting three joint projects for determining the molecular epidemiology of *P. vivax* malaria;
- conducting training courses for entomologists from Afghanistan, Islamic Republic of Iran and Pakistan.

The Regional Office supported the Horn of Africa network for monitoring therapeutic efficacy of antimalarial treatment (HANMAT). Along with Horn of Africa countries Djibouti, Ethiopia, Eritrea and Somalia, Saudi Arabia, Sudan and Yemen are also members of this network. In a meeting in 2009, these countries decided to explore the possibility of expanding the network's scope to include other aspects of malaria control.

Surveillance, monitoring and evaluation

Initiatives to strengthen the surveillance, monitoring and evaluation of malaria have continued in the Region. Major achievements include:

- implementing a malaria database in selected provinces and states of Afghanistan and Sudan;
- implementing new data collection tools for malaria case management such as patient cards, stock management card register forms and a monthly report in Afghanistan and Sudan;
- collecting data and publishing the World Malaria Report 2005, 2008 and 2009.

All endemic countries now have malaria monitoring and evaluation plans, although some require updating. The Regional Office provided technical support to Afghanistan, Sudan and Yemen, to assist in assessing their malaria surveillance, monitoring and evaluation systems. Malaria indicator and parasite prevalence surveys were conducted in Afghanistan, Djibouti, Islamic Republic of Iran, Somalia, Sudan and Yemen. The Islamic Republic of Iran and Sudan added health facility assessments to these surveys. Surveys were conducted in some districts of Pakistan with the support of a Global Fund round seven grant.

Operational research

Various operational research projects were carried out between 2005 and 2009. WHO, UNICEF and the Kenya Medical Research Institute (KEMRI) collaborated on malaria operational research in Somalia. A successful multi-country (Afghanistan, Islamic Republic of Iran and Pakistan) research project on the molecular epidemiology of *P. vivax* malaria was conducted. Eight malaria-related tropical disease research projects were supported between 2008 and 2009. Community delivery of ACT was piloted in some countries (Afghanistan, Somalia, Sudan and Yemen). National malaria control programmes used the results of these pilot projects to roll-out home management of malaria strategies to cover all areas without access to health services and difficult to reach populations.

Financial support for malaria control

During the period 2005–2009, financial support for malaria control from national funds and

partner organizations increased. All nine endemic countries mobilized financial resources from the Global Fund and other partners, except when national resources were sufficient, such as in Saudi Arabia. The Regional Office provided ongoing training and technical support to assist in submitting Global Fund malaria project proposals. Collaboration with the Islamic Development Bank was established to provide financial support to expand the Khartoum and Gezira malaria-free initiative to include a few other states in Sudan. Funding was granted by USAID in Afghanistan to support a subnational project in the northern area for parasitological confirmation of every malaria case. The French government supported a proposal for malaria and leishmaniasis control programmes and the Gulf Cooperation Council malaria fund was established in 2009 to support Yemen under the malaria-free Arabian Peninsula Initiative. Resources from a nongovernmental organization in Kuwait, Patient Helping Funds Society, were used to support community-based malaria projects in Somalia and Yemen and also hospital care of severe cases in Somalia.



Challenges towards creating malaria-free areas

The key programmatic and health system challenges in Afghanistan, Djibouti, Pakistan, Somalia, Sudan and Yemen are:

- weak capacity of malaria control programmes, limited coverage and low quality laboratory services;
- poor malaria surveillance systems;
- lack of structures to deliver the interventions to marginalized and inaccessible populations;
- sociopolitical instability, complex emergency situations and security problems;
- weak health systems that cannot deliver timely diagnosis and treatment;
- insufficient cooperation with the private sector;
- weak logistics, supply and management systems;
- wide availability of substandard and counterfeit anti-malaria medicines;
- widespread resistance to chloroquine and increasing resistance to other anti-malaria medicines;
- increasing resistance of vectors to insecticides, particularly pyrethroids;
- the limited availability of trained and motivated personnel to effectively carry out programme delivery.



Actions required and future perspectives

With the current low rates of malaria prevention and care coverage in endemic countries, eliminating malaria is a significantly harder goal to achieve in these countries. Sustained political commitment with adequate funding, intersectoral collaboration, strong leadership and skillful programme management are crucial requirements to achieve elimination in these endemic countries. Successful elimination requires full involvement of the private sector, nongovernmental organizations and community-based programmes to ensure universal access to effective tools for diagnosis, treatment and prevention. The malaria situation in neighbouring countries needs to be considered and functional intercountry cooperation mechanisms should be in place. The elements required for malaria elimination will contribute to strengthening the health systems in these countries, particularly for local competence, infrastructure, and laboratory and surveillance systems.

Expanding schistosomiasis-free areas

Why is expanding schistosomiasis-free areas important?

Schistosomiasis is a chronic, parasitic disease caused by blood flukes (trematode worms) of the genus *Schistosoma*. Schistosomiasis is prevalent in tropical and sub-tropical areas, especially in communities without access to safe drinking water and adequate sanitation. In the Eastern Mediterranean Region, the disease is mainly endemic in Somalia, Sudan and Yemen. Schistosomiasis and soil-transmitted helminthiasis are very important public health problems in Yemen, with an estimated prevalence of three million infected people. This figure possibly represents a significant underestimation of the actual burden of disease. If other estimations were applicable to Yemen, this could represent over half a million people with associated hidden severe pathology, including chronic hepatic pathology and renal failure.

In May 2001, the World Health Assembly endorsed a resolution (WHA54.19) urging countries to ensure access to essential drugs against schistosomiasis and soil-transmitted helminthiasis infections in endemic areas. The resolution is aimed at treating clinical cases as well as groups at high risk, such as women and children. The goal is to attain regular administration of drug treatment to at least 75% of all school-age children at risk by 2010. This resolution was based on evidence that regular treatment can significantly reduce morbidity among high-risk groups, especially school children. As treatment is safe and effective, mass treatment can be provided in endemic areas without individual diagnosis. Large-scale treatment programmes are now feasible because of the reduction in the cost of treatment. In the Eastern Mediterranean Region, the goal is to expand the disease-free areas as wide as possible.

Strategies for expanding schistosomiasis-free areas

The WHO's work on schistosomiasis forms part of an integrated approach to the control of neglected tropical diseases. Although medically diverse, neglected tropical diseases share features that allow them to persist in conditions of poverty, where they cluster and frequently overlap. The WHO strategy for schistosomiasis control focuses on reducing disease through periodic, targeted treatment with praziquantel. Strategies to expand schistosomiasis-free areas focus on:

- identifying the remaining foci of transmission and providing children with regular treatment with praziquantel, providing adequate access to sanitation, clean water and health education to slow re-infection and sustain lasting reduction in transmission;
- controlling the intermediate snail host and interrupting contact with infected water;
- improving surveillance particularly in areas of early transmission and among migrants and travellers from endemic countries.



Progress towards creating schistosomiasis-free areas

Yemen launched national campaigns for the elimination of schistosomiasis in 2008. School-age children (6–18 years) in 15 governorates were the target of a drug distribution campaign. The campaign reached more than 2.4 million children. A community-wide pilot was conducted in one highly-endemic district (Al Shehel), where the adult population was also included. Preliminary data analysis showed that overall coverage was about 80%. Anecdotal reports describe a high compliance to drug distribution activities, fostered by the social mobilization efforts.

During 2008–09, the Yemen Schistosomiasis Control Programme finalized a multi-partner, mid-term intervention (2010–2015) with the participation of the WHO, the World Bank and other technical partners, such as the Schistosomiasis Control Initiative. This mid-term intervention will enhance the current national control strategy by ensuring that

coverage is scaled up and the operational and technical capacity of the national programme is strengthened. The mid-term intervention will also enhance its public health impact by integrating the soil-transmitted helminthiasis infections control with the National Schistosomiasis Control Programme. An agreement has been signed between the Yemen Ministry of Public Health and Population and the WHO, for the provision of over 95 million tablets of praziquantel for the six-year nationwide schistosomiasis control programme. This agreement, worth over US\$ 9 million, will help lead to the control of the serious public health problem of schistosomiasis in Yemen.

Like lymphatic filariasis, the sustained control and elimination of schistosomiasis remains a challenge in Somalia and Sudan. Somalia continued to receive support from the Regional Office for case detection and treatment campaigns and drug provision for mass drug administration. The initiative targeted not only school-age children, but also the adult population in the Lower Juba and Lower Shabelle regions, which are considered to be endemic. Approximately 12 900 cases were covered during the campaigns, of which almost

95% were school-age children. The surveillance system was strengthened and new initiatives were deployed to scale up the initiative.

Expanding leishmaniasis-free areas

Why is expanding leishmaniasis-free areas important?

Each year, about 500 000 new cases of leishmaniasis infection are reported worldwide, resulting in more than 50 000 deaths. However, since leishmaniasis is not a notifiable disease in many countries, these figures are underestimated. Human and environmental factors, such as unplanned urbanization, poor sanitation, overcrowded settlements, weak health infrastructure and migration, have made leishmaniasis one of the most severe public health problems. Human infections with *Leishmania* protozoan parasites transmitted via the bite of sandflies, cause visceral, cutaneous and mucocutaneous leishmaniasis. Visceral leishmaniasis (kala-azar) is the most serious form and has a very high mortality rate unless treated. The cutaneous form causes disfiguring sores, which without treatment, can last for several months or even years.

Our regional goal is to expand the areas that are free of cutaneous leishmaniasis, particularly in the countries with foci of anthroponotic cutaneous leishmaniasis (Afghanistan, Morocco, Islamic Republic of Iran and Syrian Arab Republic) and to decrease the morbidity and mortality of visceral leishmaniasis in highly endemic countries (Iraq and Sudan).

Strategies for expanding leishmaniasis-free areas

The leishmaniasis control programme promotes and strengthens the cost-effective implementation of disease vector control at the regional and country level, in the context of integrated vector management and in line with the recommendations contained in resolution EM/



RC.52/R.6. The programme also maintains a special focus to promote multi-sectoral cooperation for programme implementation and resource mobilization and advocacy, strengthening national capacity and leadership in medical entomology and vector control, fostering operational research and surveillance and scaling-up of appropriate vector control interventions. For the anthroponotic forms of both visceral and cutaneous leishmaniasis, the strategy consists of minimizing the time elapsed between when a patient becomes infective for the vector and when that patient receives care.

Progress towards creating leishmaniasis-free areas

In response to the latest visceral leishmaniasis outbreak in southern Sudan reported in September 2009, the Regional Office in coordination with headquarters provided diagnostic tests and specific medicines (sodium stibogluconate). The need for increased capacity to deal with cutaneous leishmaniasis has been addressed and national guidelines were revised for the highly endemic countries of Afghanistan and Iraq. The WHO assessed the epidemiological situation of cutaneous leishmaniasis in Morocco, Saudi Arabia and Syrian Arab Republic and recommended new strategies for disease control with a focus on active case detection and prompt treatment. Regional training sessions for national staff were organized and guidelines were revised in countries where the disease is highly prevalent, such as in Afghanistan and Iraq.

Expanding trypanosomiasis-free areas

Why is expanding trypanosomiasis-free areas important?

Human African trypanosomiasis, or sleeping sickness, threatens over 60 million people in 36 countries of sub-Saharan Africa. The estimated annual number of new cases is currently between 50 000 and 70 000. The disease is fatal



without treatment. Transmitted by tsetse flies, trypanosomiasis brought havoc to much of sub-Saharan Africa in the 1920s. The epidemic was halted by systematically screening millions of people at risk and the disease practically disappeared between 1960 and 1965. The relaxation in screening and effective surveillance of trypanosomiasis has resulted in reappearance of the disease in endemic form in several foci over the past 30 years, including in the one remaining endemic country in the Eastern Mediterranean Region, Sudan. Trypanosomiasis mainly affects populations with poor or no access to health services. As a result, it is estimated that only 10% of those suffering from the disease receive proper screening, treatment and patient follow-up.

Strategies for expanding trypanosomiasis-free areas

The main prerequisite for a successful elimination programme is to ensure sustainability in screening, diagnosis and treatment of the affected population. The strategic approaches are based on:

- improving all organizational aspects of trypanosomiasis activities, including enhancement of the epidemiological surveillance system,

reinforcement of diagnostic facilities, development of sleeping sickness treatment centres and promotion of socio-mobilization activities

- maximizing human resources to carry out the activities and providing them with training, information exchange and dissemination of data
- integrating trypanosomiasis activities with other programmes
- promoting integrated vector management which involves sustainable, community-based activities that are directed towards the control of tsetse fly
- raising sufficient funds to implement the elimination programme.

Progress towards creating trypanosomiasis-free areas

In the Eastern Mediterranean Region, trypanosomiasis is only endemic in southern Sudan. The Regional Office supported trypanosomiasis centres by providing specific medicines and reagents for screening, diagnosis and treatment of the disease. The WHO has produced a comprehensive database of new cases reported on a yearly basis to map trypanosomiasis in Africa at the village level for the last ten years (2000–2009). Draft maps were made available to the Ministry of Health in Sudan and will be used to plan control activities in the near future.



A new treatment protocol for trypanosomiasis late-stage patients based on eflornithine-nifurtimox combination therapy has been included in the WHO Essential Medicines List in 2009. The Ministry of Health has already approved the importation and use of the new combination regimen. This new therapy represents a major improvement in terms of reducing the risk of developing drug resistance.



Vision 3

Providing a
safe vaccine
for every
childhood
disease for
every child

Our vision is that every child will receive a safe vaccine for every childhood vaccine-preventable disease. New and improved vaccines of regional importance will be added to the vaccination schedule as soon as they become available. This is the gateway for our ultimate goal: "No child will die from a vaccine-preventable disease in our Region".

Vision 3

Summary

An estimated 1 275 511 children aged under 5 years died in 2008 in the Eastern Mediterranean Region, of which about 25% could be attributed to vaccine-preventable diseases. The Eastern Mediterranean Region aims to eradicate, eliminate or control vaccine-preventable diseases through the use of quality-assured vaccines and technologies and safe immunization practices. To achieve this goal, the routine immunization is provided through the EPI in all countries of the Region.

Considerable progress has been made to increase immunization coverage in the Region and to reduce morbidity and mortality due to vaccine-preventable diseases during 2005–09. Fifteen countries and northern Sudan have achieved at least 90% coverage with DPT3 at the national level and five countries are approaching this target. DPT3 coverage is alarmingly low in Somalia (52%) and southern Sudan (43%), as they continue to face many challenges in achieving the 90% DPT3 coverage target by 2010. Despite improved coverage in routine immunization, around 1.9 million children did not receive the DPT3 vaccine in the Region in 2009. The number of reported cases of measles has reduced dramatically. By 2008, measles mortality had reduced by 93% compared to 2000 levels, however, elimination by 2010 does not seem likely. Although 16 countries in the Region have achieved maternal and neonatal tetanus elimination, six countries have not achieved elimination.

Hepatitis B vaccine was introduced in 20 countries and northern Sudan with high routine coverage, and hepatitis B birth dose was introduced in 14 countries. Haemophilus influenzae type B vaccine was introduced in 17 countries, pneumococcal vaccine in six countries and rotavirus vaccine in two countries. Of the 22 countries in the Region, 18 are regularly monitoring coverage data at the district level.

Why is providing safe vaccines for every child important?

An estimated 1 275 511 children under 5 years died in 2008 in the Eastern Mediterranean Region. Most of the deaths attributable to vaccine-preventable diseases are due to pneumonia and diarrhoeal diseases caused by *Haemophilus influenzae* type B (Hib) and *Streptococcus pneumoniae* and rotavirus, respectively despite the existence and availability of potent and safe vaccines. Around 4.3 million people are infected with hepatitis B virus in the Region each year. Prior to the introduction of hepatitis B vaccine into the EPI, the prevalence of chronic hepatitis B virus infection ranged from 2% to 10% in the Region. Hepatitis C virus prevalence in the Region is variable and ranges from 1% to 2.5% in most countries, with higher prevalence reported in Libyan Arab Jamahiriya, Sudan, Yemen (2.5%–10%) and Egypt (more than 10%).

In May 2005, the World Health Assembly passed a resolution (WHA58.15) adopting the WHO/UNICEF Global Immunization and Vision Strategy 2006–2015 (GIVS). The strategy aims to administer DPT3 to at least 90% of the population, with at least 80% coverage in every district by 2010 or earlier. In the Eastern Mediterranean Region, the goal is control, elimination and eradication of all vaccine-preventable diseases through the use of quality-assured vaccines and technologies

and safe immunization practices. The regional targets are to:

- achieve 90% DPT3 coverage at a national level and 80% in every district by 2010;
- reduce measles mortality by 90% compared to the 2000 level by 2010;
- eliminate measles from all countries by 2010;
- achieve a two-thirds reduction of morbidity and mortality of vaccine-preventable diseases compared to 2000 levels by 2015;
- reduce hepatitis B surface antigen prevalence to less than 1% among children aged less than 5 years in all countries by 2015;
- eliminate maternal and neonatal tetanus as soon as possible.

Interventions and approaches to achieve these targets include:

- maximizing access to efficient, high-quality and sustainable immunization services and devising innovative strategies to increase routine immunization coverage;
- accelerating the introduction of new vaccines and appropriate technologies into national immunization programmes;
- providing technical and logistical support to countries by advising on vaccine procurement systems, cold chain logistic and vaccine management and injection safety at national, provincial and district levels to ensure a



sustainable and reliable supply of affordable vaccines of assured quality;

- strengthening surveillance for diseases targeted by existing and new vaccines;
- promoting integration of immunization with other critical health interventions;
- managing vaccination programmes within the context of global interdependence;
- supporting countries for achieving financial sustainability of immunization programmes;
- strengthening national decision making processes through establishing well-functioning national immunization technical advisory groups.

Routine immunization is the basic strategy in the Region to achieve the targets. Routine immunization is the most cost-effective health intervention and has a proven track record in communicable disease control. The EPI provides immunizations in all countries of the Region for tuberculosis using the bacille Calmette-Guérin (BCG) vaccine, at least three rounds of diphtheria, pertussis and tetanus (DPT) vaccine, oral poliovaccine (OPV) and hepatitis B vaccine, two doses of measles vaccine and the immunization of pregnant women and women of childbearing age to prevent maternal and neonatal tetanus.

The Reach Every District (RED) approach is a comprehensive way to reach the unreached by immunization, jointly developed by the WHO and UNICEF. RED is a timely reminder of the principles of better access to and utilization of, the basic package of health services. It also provides a way to expand beyond routine coverage to provide more protection for children. This strategy was developed after EPI experiences that demonstrated the effectiveness of improving vaccine delivery by targeting weak district level activities. The RED approach calls for simple and achievable strategies within a decentralized EPI management structure. At present, RED is the most suitable strategy for Afghanistan, Djibouti, Iraq, Pakistan, Somalia, Sudan and Yemen, as RED specifically addresses the main reasons for the low vaccination coverage in the targeted districts.



Progress towards providing safe vaccines for every child

Considerable progress has been made to increase immunization coverage in the Region and to reduce morbidity and mortality due to vaccine-preventable diseases during 2005–2009. The reported regional immunization coverage with DPT3 increased from just below 80% in 2005 to 88% in 2009 (Figure 5). Fifteen countries and northern Sudan have achieved the target of 90% coverage, while Afghanistan, Djibouti, Iraq, Pakistan and Yemen are approaching this target. Despite the significant increase in 2009, DPT3 coverage is alarmingly low in Somalia (52%) and southern Sudan (43%). DPT3 coverage in Afghanistan increased from 66% in 2004 to 83% in 2009, while in Pakistan coverage increased from 65% in 2004 to 85% in 2009.

Immunization coverage is improving in Somalia, despite a challenging environment. EPI units were established in the northern part of the country. Somalia has adopted an innovative approach to immunization by providing a suite of vaccinations and other health products on child health days.

Child health days were implemented twice in 2009 through mobile fixed-post campaigns that targeted 1.6 million children aged less than 5 years in both rural and urban areas, including hard-to-reach and security compromised areas. Reported DPT3 coverage increased from 31% in 2008 to 52% in 2009 (Figure 5). The coverage with the first dose of measles-containing vaccine increased from 24% in 2008 to 59% in 2009.

Routine immunization coverage improved in northern Sudan, from 79% in 2004 to 91% in 2009. Pentavalent vaccine was introduced in early 2008 and rotavirus vaccine is expected to be introduced in 2011. Immunization coverage in southern Sudan is low, mainly due to weak EPI structure, inadequate human and financial resources and volatile security. Despite this challenging situation, an EPI structure was completed at all levels during 2009, the RED approach was adopted and acceleration campaigns were implemented to improve vaccination coverage.

Integrated primary health care interventions were carried out in Yemen and RED was intensified

through outreach and mobile teams. Acceleration campaigns were launched, with particular focus in conflict areas. DPT3 coverage has increased from 78% in 2004 to 86% in 2009. Pentavalent vaccine was introduced in March 2005 and pneumococcal vaccine is expected to be introduced in January 2011. Djibouti is currently implementing the RED approach to improve vaccination coverage. DPT3 coverage improved from about 67% in 2004 to almost 90% in 2009 (Figure 5).

The Regional Office continued to provide technical support to countries, to ensure quality, safety and efficacy of vaccines, to ensure every child in every district is reached and to implement the regional strategy for ensuring vaccine self-sufficiency.

The development of computerized software for vaccine management is another achievement in the Region. Cold chain assessments were conducted in countries that were preparing for new vaccine introduction into national vaccination programmes, resulting in plans for upgrading their respective cold chain capacities. WHO and UNICEF certificates of effective vaccine store management

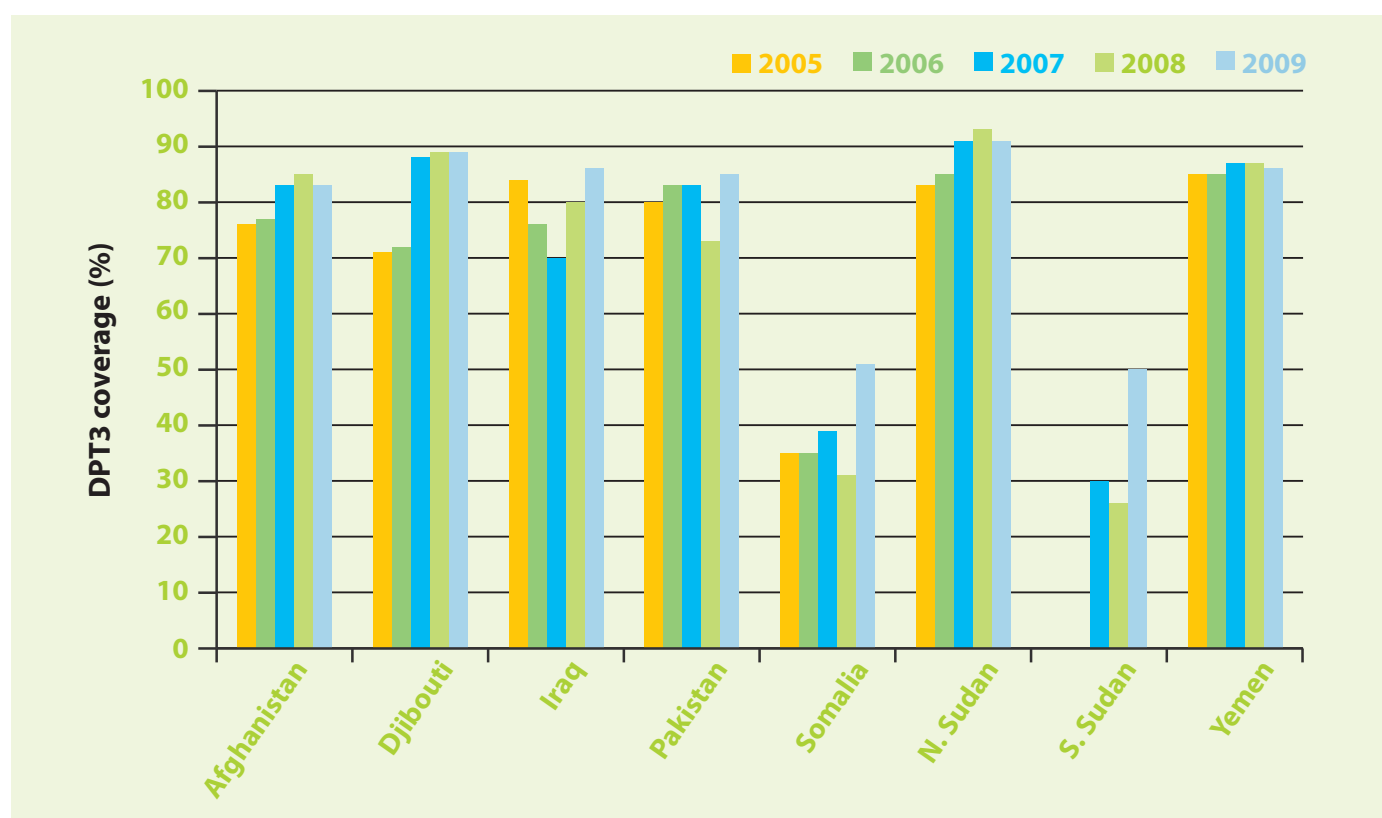


Figure 5

DPT3 coverage in priority countries of the Eastern Mediterranean Region, 2005–2009

Source: WHO/UNICEF Joint Reporting Form.

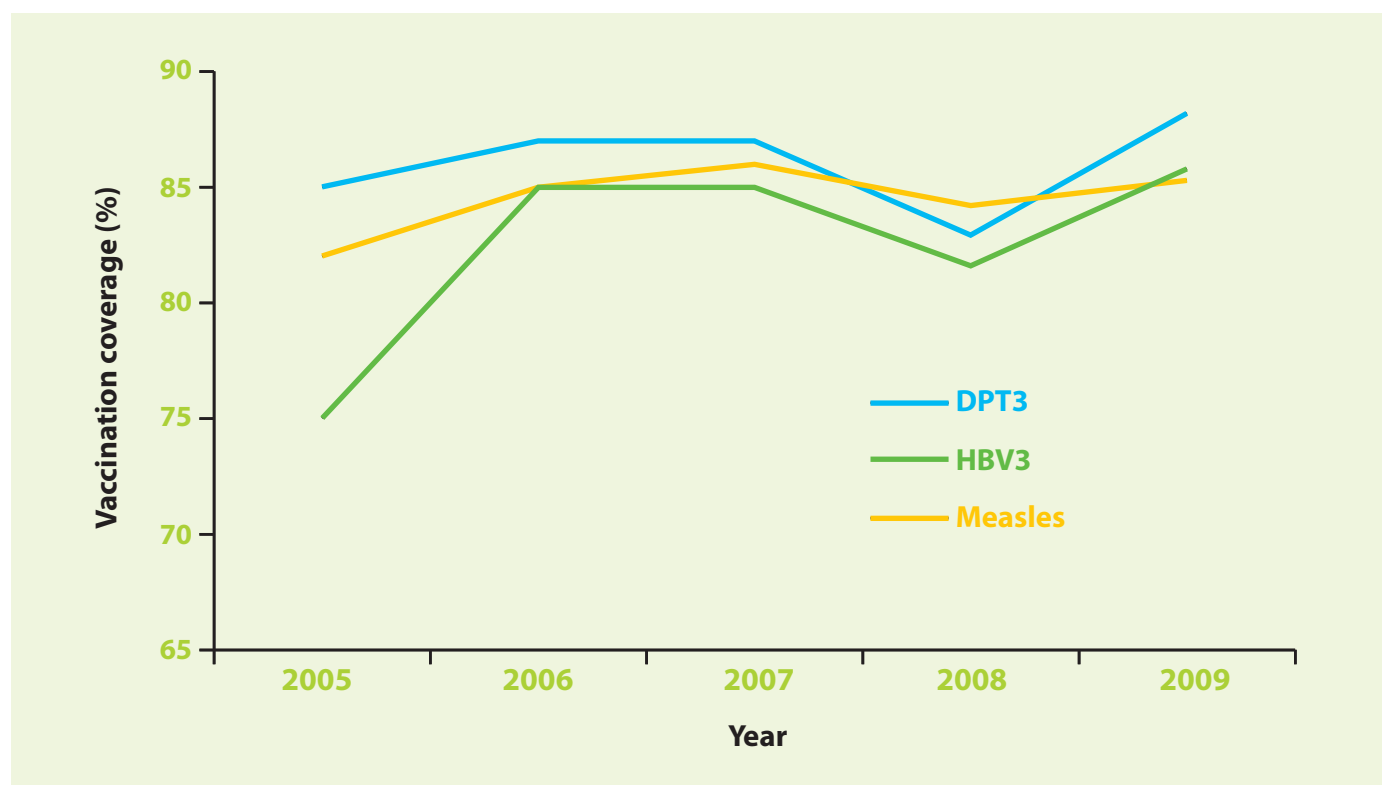


Figure 6

Routine vaccination coverage in the Eastern Mediterranean Region, 2005–2009

were given to Oman, Afghanistan, northern Sudan and Lebanon. Vaccine procurement system assessments were conducted in five countries and pool vaccine procurement systems are in the process of being established. National EPI have been used in several countries as a platform for other primary health care interventions, such as vitamin A supplementation, distribution of bed nets and de-worming.

New and under-utilized vaccines and vaccine management

In recent years, many new vaccines were introduced in the Region. The availability of Hib, *Streptococcus pneumoniae* (pneumococcus), rotavirus and rubella vaccines have been improved, although still with a very low coverage and accessibility. With the support of the GAVI Alliance, *Haemophilus influenzae* type B (Hib) vaccine, as part of a pentavalent vaccine, was introduced in 2008 in northern Sudan and Pakistan and in early 2009 in Afghanistan. In 1992, WHO recommended the inclusion of the hepatitis

B vaccine into the childhood EPI schedule for all Member States. Hepatitis B vaccine has been introduced into the EPI in all Eastern Mediterranean Region countries, except Somalia and southern Sudan. Afghanistan, Djibouti and northern Sudan introduced the vaccine between 2005 and 2009. Since its introduction, a greater proportion of children born in the Region have received three doses of the hepatitis B vaccine. In 2009, 85.8% of infants received three doses of hepatitis B vaccine (HBV3), compared to 75% in 2005 (Figure 6). Hepatitis B birth dose was introduced in 14 countries. Hib vaccine was introduced in 17 countries, pneumococcal vaccine in six countries and rotavirus vaccine in two countries. A global task force was formed by the WHO Director-General at the request of the Regional Director to address the high price of new vaccines. The task force is working on developing solutions to ensure equitable access to these vaccines.

Since 2008, 21 countries have established national immunization technical advisory groups and almost all countries are taking the necessary measures to strengthen their advisory groups by

issuing ministerial decrees, developing terms of reference and standard operating procedures, completing declarations of interest, appointing independent chairpersons and ensuring multidisciplinary composition.

Supporting evidence-based decision making

The national capacity for evidence-based decision-making improved remarkably. Regional surveillance networks were established for assessment of the burden of Hib, pneumococcal and rotavirus diseases in order to support evidence-based decision-making on introduction of new vaccines. Currently, 17 countries are implementing bacterial meningitis surveillance; 5 countries are implementing surveillance of other invasive bacterial diseases (pneumonia and sepsis) and 17 countries have implemented rotavirus surveillance. The data generated was instrumental for decision-making on introduction of rotavirus and pneumococcal vaccines in many countries.



Improving surveillance, monitoring and evaluation

Capacity to conduct measles case-based surveillance and other vaccine-preventable diseases surveillance has improved during 2005–2009. Of the 22 countries in the Region, 18 are regularly monitoring vaccination coverage data at the district level. EPI data management systems were improved, with most countries having developed the necessary software, conducted training and carried out data quality assessments.

Challenges to providing safe vaccines for every child

Despite the recent progress of the EPI in the Region, many countries are still far from achieving coverage targets and measles elimination in 2010. Due to difficult and emergency situations, progress has not been satisfactory in Somalia and southern Sudan. Varying technical and managerial capacity at the national level and an inability to deal with multiple priorities, have been the major challenges in reaching the targets set for the Region. In some countries, national ownership is not adequate and can result in insufficient government financial contributions to the EPI. Ongoing conflicts in the Region are impeding the implementation of full-scale immunization programmes.

The introduction of new vaccines is slow. The main obstacles in reducing mortality due to these vaccine-preventable diseases are the cost of the new vaccines compared to the traditional vaccines, the mobilization of resources, the lack of awareness regarding the cost effectiveness of the vaccines and recognition of the level of the burden of the diseases. Political commitment, competing priorities, social mobilization, advocacy efforts from decision-makers and the medical community, financial constraints, weak management and the technical capacity of the country are other limiting factors regarding introducing new vaccines.

Is it possible to provide safe vaccines for every child?

Substantial progress has been made in reducing communicable disease related morbidity and mortality. Immunization coverage has been improved in most countries and resources have been mobilized for the provision of safe vaccines. Fifteen countries and northern Sudan have achieved 90% DPT3 coverage at the national level and five more countries are approaching the target. Somalia and southern Sudan are facing many challenges and may not be able to achieve 90% DPT3 coverage target by 2010. By 2008, measles mortality had reduced by 93% compared to 2000 levels, however, elimination by 2010 does not seem likely. Good coverage with hepatitis B vaccine has been introduced in most countries and the target of reduction of hepatitis B surface antigen prevalence to less than 1% among children aged less than 5 years by 2015 can be achieved with sustained efforts.

However, vaccine-preventable disease mortality remains relatively high, considering the availability of strong control and prevention tools. Access to high-quality and regular immunization services is still low in several areas in Somalia and southern Sudan and new life-saving vaccines, like



Hib, pneumococcal and rotavirus vaccines, are very under-utilized in the Region. This is mainly because of their high prices, the lack of awareness among decision-makers about their importance, the weak vaccine procurement mechanisms in the Region and the lack of finance or support for their purchase in middle-income countries.



Vision 4

Curbing the HIV/AIDS epidemic

Antiretroviral therapy is now available to all. The comprehensive package for prevention and care for HIV/AIDS is now complete. Our vision is to curb the epidemic by adopting this comprehensive package in all countries of the Region.

Vision 4

Summary

During 2008, there were 61 000 new HIV infections, 29 000 people died from the condition and 460 000 people were living with HIV in the Eastern Mediterranean Region. Generalized epidemics exist in Djibouti, southern Sudan and Somalia, while concentrated epidemics exist among high-risk populations (such as injecting drug users) in the Islamic Republic of Iran, Libyan Arab Jamahiriya and Pakistan. Data reported to the Regional Office and studies show that some sexually transmitted infections are highly prevalent in the Region. Some estimates suggest that approximately 10 million new sexually transmitted infections occur in the Region every year.

In line with MDG 6, the regional goal is to reduce the transmission of, vulnerability to and impact of HIV/AIDS and sexually transmitted infections through a comprehensive, effective and sustainable health-sector response to the epidemic. The objectives are to ensure reliable data to guide the response, improve case finding and management, promote safe sexual behaviour and interrupt transmission in high-transmission networks through targeted interventions.

All countries in the Region have increased efforts to improve access to antiretroviral therapy (ART), providing life-saving medicines free of charge to those people living with HIV (PLHIV). All countries now provide HIV treatment and care services in their capital city and most have expanded access to peripheral hospitals. Most countries do not provide any tailored services for sexually transmitted infections for the most-at-risk populations and very few countries have implemented control programmes for sexually transmitted infections. Most countries have shown political commitment, mobilized resources and developed or updated strategies for scaling-up prevention, treatment and care. Despite some improvements, surveillance, monitoring and evaluation systems in most countries do not provide reliable information on the distribution and trends of HIV/AIDS and sexually transmitted infections, vulnerability in the population and the coverage and quality of services.

Why is control of HIV/AIDS and sexually transmitted infections important?

In 2008, there were 61 000 new HIV infections in the Eastern Mediterranean Region, 29 000 deaths due to HIV/AIDS and around 460 000 people were living with the condition. Data show that generalized epidemics (HIV prevalence of 1% or more in the general population) exist in Djibouti, southern parts of Sudan and some areas in Somalia. Concentrated epidemics (HIV prevalence of 5% or more in most-at-risk populations) among injecting drug users (exist in the Islamic Republic of Iran, Libyan Arab Jamahiriya and Pakistan and possibly in a few other countries. However, most countries are in a low-level HIV epidemic state where HIV prevalence is below 5% among the most-at-risk populations and below 1% in the general population. Consistent with global patterns, the rate of HIV infection in the Region is largest among injecting drug users. About 0.2% of the Eastern Mediterranean Region population, or close to one million people, are injecting drug users.



Evidence suggests that HIV infections are increasing among men who have sex with other men. In some countries, including Egypt, Sudan and Tunisia, data show elevated HIV prevalence in this group. Several studies in different countries of the Region show that sub-groups of men who have sex with men may engage in high levels of risky behaviours, such as multiple sexual partnerships, low condom use and high prevalence of sex work. Further, there is evidence that a considerable proportion of men who have sex with men also engage in heterosexual sex and injecting drug use. Among female sex workers, HIV prevalence has remained at relatively low levels in the Region, except for Djibouti and some areas in Morocco and Somalia.

Sexually transmitted infections other than HIV cause considerable mortality and morbidity in both adults and newborn infants and amplify the risk of HIV transmission. Reliable data on global and regional prevalence are limited because surveillance of sexually transmitted infections has been largely neglected and funding for surveillance remains inadequate at the global, regional and national level. Data reported to the Regional Office and studies show that some sexually transmitted infections are highly prevalent in the Region. Some estimates show that approximately 10 million new such infections occur in the Region every year. Trichomoniasis appears to be the most common, followed by gonorrhoea and, to a lesser extent, syphilis.

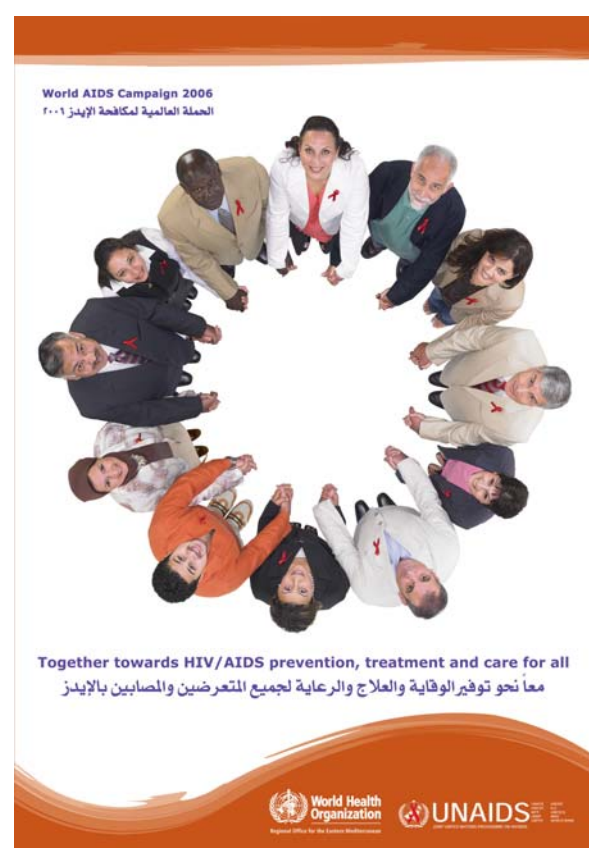
Strategies for control of HIV/AIDS and sexually transmitted infections

The MDG target for HIV/AIDS is to “have halted by 2015 and begun to reverse the spread of HIV/AIDS”. The regional goal is to reduce the transmission of, vulnerability to and impact of HIV/AIDS and sexually transmitted infections through a comprehensive, effective and sustainable health-sector response to the epidemic. The regional HIV/AIDS and sexually transmitted infections programme aims to develop national capacity in the health sector to strengthen and scale up all aspects of prevention, treatment and care. Other objectives are to strengthen programme planning,

management, monitoring and evaluation and strengthen national capacity in the delivery of interventions and services. The regional targets for controlling HIV/AIDS and sexually transmitted infections during 2005–2009 were:

- by 2007 all countries will have shown political commitment, mobilized resources and developed or updated strategies for scaling-up prevention, treatment and care through the health sector;
- by 2010 all countries will have established surveillance and monitoring and evaluation systems that generate reliable information on the distribution and trends of HIV/AIDS and sexually transmitted infections and vulnerability in the population, as well as the coverage and quality of services;
- by 2008 all countries will have put into action a plan to build the necessary infra-structural and human capacity to enable implementation of the health sector response
- by 2010 all countries will have expanded access to HIV/AIDS and sexually transmitted infections prevention, care and treatment services;
- by 2010 all countries will have developed and implemented strategies to ensure access to HIV/AIDS and sexually transmitted infections prevention, care and treatment for high-risk populations that are hard-to-reach by existing public health services;
- by 2007 countries will have integrated HIV/AIDS and sexually transmitted infections prevention, treatment and care in their national emergency responses and international assistance programmes.

The Regional Committee for the Eastern Mediterranean has endorsed a regional strategy for the prevention and control of sexually transmitted infections for 2009–2015. The strategy aims to generate an accelerated regional response for the prevention and control of sexually transmitted infections in order to achieve international health goals. The objectives are to ensure reliable data to guide the response, improve case finding and management, promote safe sexual behaviour and interrupt transmission in high-transmission networks through targeted interventions. The key strategic approaches to achieve these objectives include:



- strengthening epidemiological surveillance and monitoring programme implementation and effectiveness;
- promoting services, health care-seeking behaviour, effective clinical management and case finding through screening of asymptomatic infections;
- ensuring easy access to integrated services for case finding and treatment;
- developing a communication strategy and key messages;
- establishing an enabling environment and carrying out operational research.

Progress towards HIV/AIDS and sexually transmitted infections control

All countries in the Region increased coverage with HIV treatment between 2005 and 2009. Sixteen countries reported progress in coverage with HIV services among people in need (Afghanistan, Djibouti, Egypt, Islamic Republic of Iran, Iraq, Jordan, Lebanon, Morocco, Oman, Pakistan, Saudi Arabia, Somalia, Sudan, Tunisia, United Arab Emirates and Yemen). HIV programmes provided access to HIV care and treatment even in very difficult situations. In Somalia, despite

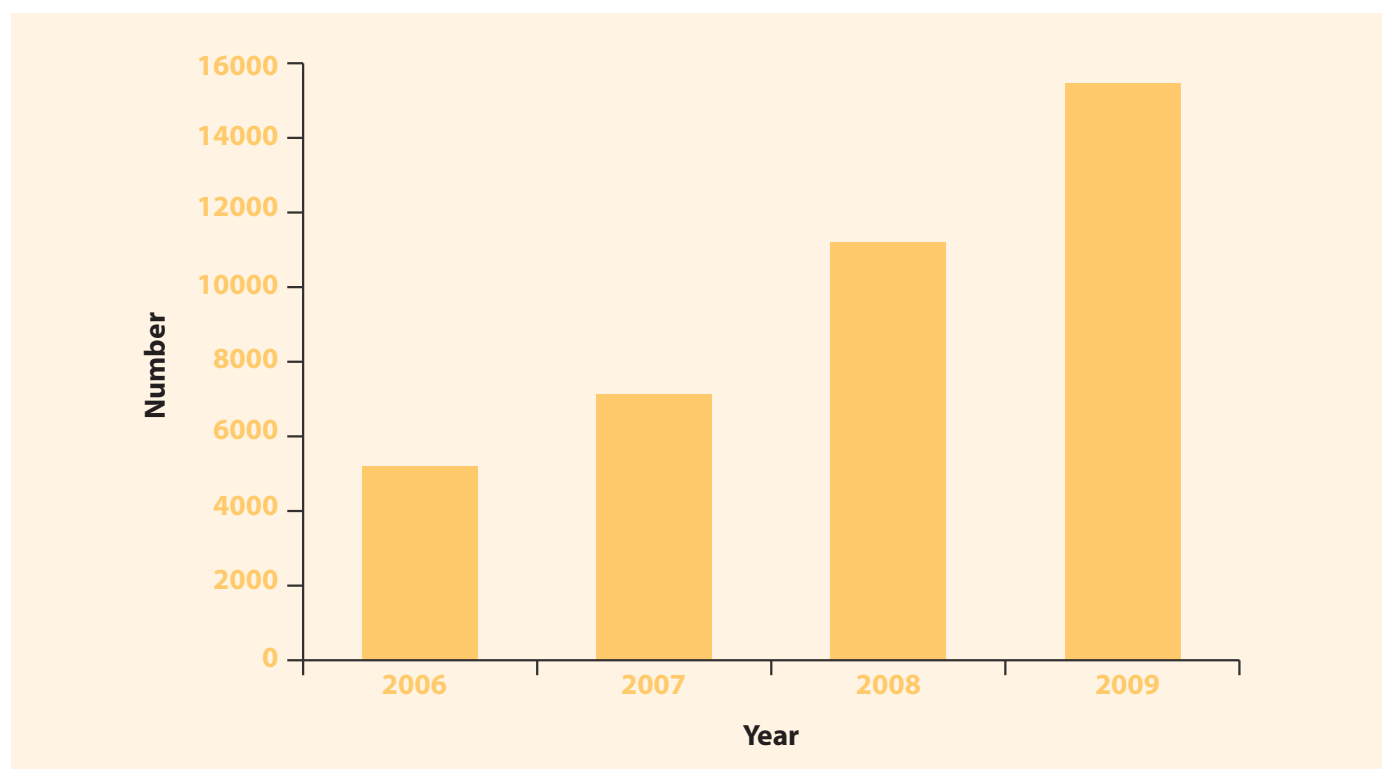


Figure 7

Number of people living with HIV and receiving antiretroviral therapy, 2006–2009

Source: Universal access progress report of WHO, UNAIDS, UNICEF (April 2007) and regional reporting on access to ART (2006–8; National AIDS Programme data for 2009)

the prevailing security situation and a weak health system, there has been a steady increase in the number of people receiving antiretroviral therapy (ART) for HIV over the past three years. In southern Sudan, about 2000 people have received ART in less than three years.

Collaboration between HIV and tuberculosis programmes has progressed in the Region. More countries are offering HIV testing and counselling to tuberculosis patients as part of the standard of care. ART and cotrimoxazole prophylaxis are increasingly available for tuberculosis patients with an HIV infection, while intensified tuberculosis case finding, isoniazid preventive therapy and tuberculosis infection control are promoted. However, in many settings the scale of collaboration remains limited. The Regional Office has developed a regional strategy for strengthening tuberculosis and HIV programme collaboration, which focuses on supporting capacity-building, strategic guidance, tools development and in-country support.

HIV treatment and care

All countries in the Region have increased efforts to improve access to life-saving antiretroviral therapy (ART). The number of PLHIV on ART has increased in the past few years from 5209 in 2006 to 15 483 in 2009 (Figure 7). Pakistan, Somalia and Sudan doubled the number of PLHIV and receiving ART. The number of HIV infected pregnant women, who received ART for the prevention of mother-to-child transmission, increased three-fold during the same period. All countries provided antiretroviral medicines free of charge to those PLHIV. Of PLHIV in need of ART, who were identified and known to the health system, more than 80% actually received ART. However, the actual number of PLHIV who are in need of ART is underestimated. In order to achieve higher coverage with care, treatment and prevention services, further efforts to identify PLHIV is required.

All countries now provide HIV treatment and care services in their capital city and most have expanded access to peripheral hospitals. Although

many national ART programmes are in their early stages and have low ART coverage, some countries, such as the Islamic Republic of Iran, have already reported a high proportion (more than 10%) of people receiving second line ART, indicating the emergence of HIV drug resistance. Northern Sudan expanded its HIV treatment services from 21 in 2007 to 32 in 2009. In Somalia, cohort analysis of ART monitoring data shows that 76% of PLHIV received ART. Morocco has provided a good example for using an evidence-based strategic approach to achieving more affordable prices for antiretroviral medicines (Box 3).

HIV testing and counselling

To achieve universal access, most countries have set targets for expanding access to HIV testing and counselling access by monitoring the number of HIV testing and counselling facilities that are operational, or have progressed towards being operational. By the end of 2007, Sudan had exceeded its targets by 50% in the north but only achieved 4% of the target in the south. The Islamic Republic of Iran, Lebanon, Oman and United Arab Emirates met their target. However, Yemen only achieved 50% of its targets. The use of voluntary counselling and testing services among populations most at risk is often limited by the unavailability of tailored services to meet their needs. Few countries have data on access of most-at-risk populations to HIV testing and counselling. Surveillance among injecting drug users in the Islamic Republic of Iran showed that

23% had accessed HIV counselling and testing services, while in Oman, only 1% of injecting drug users had undergone counselling and testing.

Prevention of mother-to-child transmission

Although all countries in the Region offer some services for the prevention of mother-to-child transmission of HIV (PMTCT), those services remain fragmented and limited. Accordingly, the percentage of pregnant women accessing antiretrovirals for PMTCT is the lowest in the world. In 2008, 50% of countries in the Region had established national programmes for PMTCT compared to one third in 2006. In 2008, of 18 000 estimated pregnant women with HIV needing antiretrovirals for PMTCT, less than 500 received it. PMTCT guidelines have been developed in most countries but are not always updated or inclusive. Comprehensiveness, quality of services, retention and linkages between reproductive health and HIV care and treatment services are other major bottlenecks to achieve lower mother-to-child transmission.

Some countries, such as Djibouti and Oman, have integrated a voluntary HIV test into the package of services that are provided in antenatal care. Oman has made notable progress and introduced voluntary HIV testing to all pregnant women. PMTCT is a high priority in generalized epidemics in Djibouti, some parts of Somalia and southern Sudan and. The uptake of HIV testing and the high

Box 3

Morocco: an evidenced-based approach to achieving affordable antiretroviral medicines

Since the introduction of antiretroviral medicines in 1998, Morocco has introduced measures to reduce their cost through price negotiations with suppliers, exemption of duties and taxes, introducing generic combinations and seeking collaboration with the Clinton HIV/AIDS Initiative. These measures resulted in a reduction of the average price for first-line regimens from US\$ 1300 per person per month in 1998 to US\$ 48 in 2007. Until 2007, Morocco was still paying high prices for some antiretroviral medicines in comparison to other middle-income countries. In 2007, the Ministry of Health reviewed the list of individual and fixed dose combinations being used in the country and selected a smaller number of cost-effective products in order to avoid having to procure small quantities while ensuring optimal treatment outcomes. As a result, the price for first-line treatment dropped further to US\$ 28 per person per month.



drop-out rate of HIV infected pregnant women from the programme are major challenges for these countries. Yemen has developed a plan for the implementation of PMTCT and selected the first sites. In Pakistan, two training courses on PMTCT were carried out following the development of the national PMTCT training curriculum and PMTCT services are functional in seven hospitals in major cities across the country.

Reaching populations at high risk

Notable progress has been made in some countries with the promotion of harm reduction services for injecting drug users from 2005–2009. The harm reduction programme in the Islamic Republic of Iran is a large-scale comprehensive programme that is regarded globally as a good practice model programme. Afghanistan has adopted harm reduction as part of its drug control measures. Facing increasing HIV transmission among injecting drug users, it has recently introduced opioid substitution therapy for injecting drug users in Kabul. Morocco has adopted harm reduction as a national policy for preventing HIV transmission through injecting drug use and initiated pilot sites

for needle and syringes programmes and for opioid substitution therapy. Lebanon has reconsidered its regulations to allow the introduction of opioid substitution therapy. Oman has reviewed its policy and programmatic factors that may enable or obstruct the introduction of harm reduction measures. Bahrain has completed a behavioural study among injecting drug users in preparation for addressing the risks. Needle and syringe programmes are now available in nine countries, however, most are small-scale programmes except in Afghanistan, the Islamic Republic of Iran and Pakistan. Without further expansion, small-scale projects will not result in a substantial impact on the HIV epidemic among injecting drug users.

Morocco is the only country that has large-scale coverage with services for sex workers, offering a comprehensive package of HIV testing and counselling, condom distribution and STI case management. Djibouti, Lebanon and Tunisia have started similar programmes, albeit with lesser coverage and with varied elements in the package of services.

Men who have sex with men remain the group that is least targeted in the Region, due to the high stigmatization and illegal status of the group. Only Morocco and, to a lesser extent Lebanon, have introduced a comprehensive package of services comprising of HIV testing and counselling, condom distribution and STI diagnosis and management..

Political commitment and funding for HIV programmes

The majority of low-income countries have been successful in recent years in mobilizing external funding for their HIV/AIDS programmes, mainly through the Global Fund and/or the World Bank. While availability of substantial external funding was coupled with increased commitment of country leadership in HIV prevention and control, this has not yet translated in all countries allocating increased domestic resources. The Regional Office and the Joint United Nations Programme on HIV/AIDS (UNAIDS) in the Middle East and North Africa provided training to

countries on proposal development through a regional workshop. In Somalia, Sudan and Yemen, the WHO has been the sub-recipient of Global Fund grants totaling US\$ 6.2 million for the provision of technical support to HIV health sector programmes. Additional funds for HIV programme support have been made available through the Swiss-based Drosos Foundation, the governments of Canada, Sweden, Norway, United Kingdom and Germany, the European Commission, UNAIDS and the World Bank.

Epidemic surveillance

Ten countries in the Region have conducted studies on HIV prevalence and risk behaviours among most-at-risk populations. These studies have contributed to a better understanding of the HIV epidemics at a country level and in the Region. The number of countries that obtained data on HIV prevalence and risk behaviours among prisoners, injecting drug users, men having sex with men and sex workers has increased. In addition, more countries have improved the quality of surveys by using probability-based sampling methodologies. Survey data can be obtained from sex workers and prisoners in Morocco through services provided by nongovernmental organizations. These settings have been used for two-yearly service-based HIV sero-surveys among these populations. Regular surveys at fixed time intervals, using consistent methodologies, allow HIV programmes in Morocco and Pakistan (Box 4) to observe trends in seroprevalence and behaviours over time. In turn, this allows for interventions to be adjusted and conclusions to be drawn about the impact. Yemen is preparing for a HIV prevalence and behavioural

survey (bio-behavioural survey) among female sex workers in Aden. The Islamic Republic of Iran is currently carrying out community-based bio-behavioural surveys among prisoners, non-injecting drug users and truck drivers and preparing for surveys among sex workers and injecting drug users. Saudi Arabia is carrying out a survey among a population of illegal immigrants and Sudan has ongoing community-based surveys among men having sex with men, sex workers and truck drivers. The Regional Office continued to build national capacity in planning and implementing surveillance for HIV and sexually transmitted infections. It supported reviews of surveillance systems in Egypt, Lebanon and Oman, resulting in recommendations on how to enforce or re-direct existing surveillance activities in order to provide more consistent and relevant information for HIV programme planning and monitoring.

The Regional Office continued to build national capacity in planning and implementing surveillance for HIV and sexually transmitted infections. It supported reviews of surveillance systems in Egypt, Lebanon and Oman, resulting in recommendations on how to enforce or re-direct existing surveillance activities in order to provide more consistent and relevant information for HIV programme planning and monitoring.

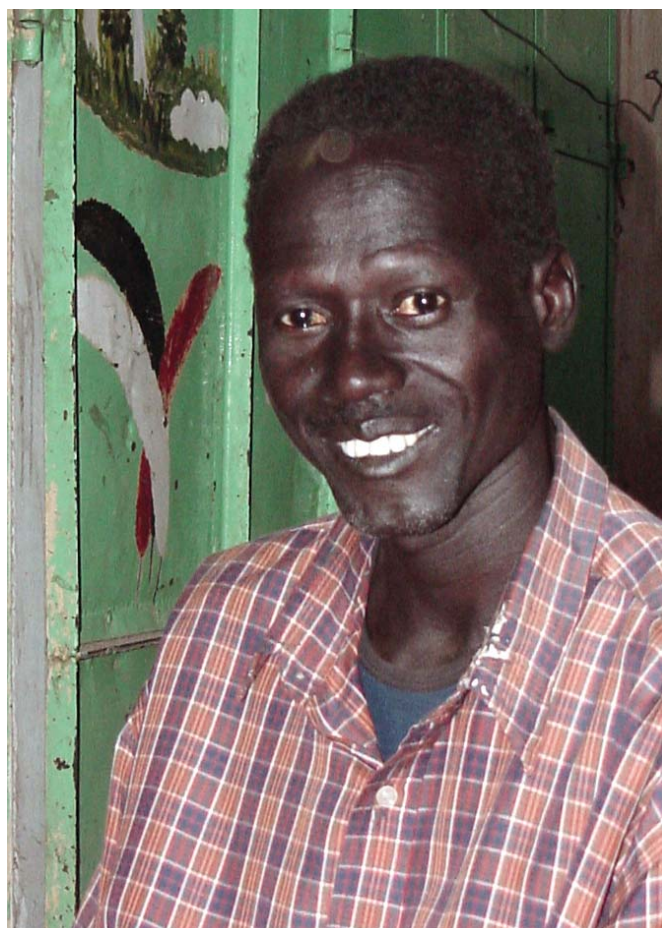
Control of other sexually transmitted infections

In 2007, the World Health Assembly adopted the global strategies of reproductive health and prevention and control of sexually transmitted

Box 4

HIV epidemic surveillance in Pakistan

Pakistan has established a system of regular annual surveys among female and male sex workers, injecting drug users and transsexuals since 2004. Geographical and population coverage for the surveillance system was gradually expanded. To date, thanks to its HIV surveillance system, Pakistan has information on the sizes of these populations and on trends in HIV prevalence. Behavioural surveillance information was used by the National AIDS Control Programme to estimate needs and track coverage with services designed to target these populations.



infections. Within the framework of the WHO/UNFPA Strategic Partnership Programme, Afghanistan, Egypt, Pakistan, Somalia, Sudan and Tunisia, improved the control of sexually transmitted infections by adapting the WHO guidelines and implementing them at the national level. The Eastern Mediterranean Network of Sexually Transmitted Infection Control expanded its membership to 26 regional experts. The network facilitated the exchange of information among members and others interested parties through a website and regular newsletters. With the support of network members, reviews of existing data were carried out in Egypt, Lebanon, Pakistan, Sudan and Tunisia to gain a better understanding of the epidemiological situation and to identify information gaps. In its endorsement of the regional strategy for the prevention and control of sexually transmitted infections 2009–2015 (resolution EM/RC55/R.6), the Regional Committee requested that an action plan be prepared for each country, in collaboration with partners and other organizations in United Nations system to implement the strategy.

Challenges in achieving the regional targets

Most countries in the Region have not taken the necessary steps to estimate the size of their at-risk population. Therefore, they are not able to forecast the burden of new infections and plan for effective coverage with prevention programmes. Stigma and discrimination against PLHIV remain prevalent in the Region and act as barriers against more people accessing testing and counselling services. As a result, the Region still has the lowest global ART coverage rate. Countries with the highest burden of HIV in the Region are also those that have weaker public health systems. The main challenges for increasing coverage with quality HIV services and other health services are:

- lack of qualified health workers;
- weak financial and resource management systems;
- lack of quality assurance in the public and private sector;
- weak infrastructure, especially in laboratories;
- low capacity of existing management information systems;
- lack of formal mechanisms to involve civil society in service delivery to hidden and hard-to-reach populations.

Given the limited experience with HIV interventions in the Region, weak health and social service infrastructure and the still prevailing reluctance of policy-makers and decision-makers to adopt unconventional approaches to address the needs of most-at-risk populations, the efficient use of available resources remains a challenge.

The degree to which countries in the Region have established control programmes for sexually transmitted infections varies widely. Most such programmes are not appropriately equipped with human and financial resources. Most countries in the Region have not developed an action plan or allocated resources to implement control strategies. Only Bahrain, Islamic Republic of Iran, Morocco, Pakistan and Saudi Arabia have a national action plan to implement strategies and have allocated more than 50% of the funds

required for the response. Most countries in the Region do not provide any tailored services for the most-at-risk populations and only two countries, Morocco and Pakistan, have implemented control programmes.

Is it possible to control HIV/AIDS?

Opportunities for expanding prevention and treatment interventions for HIV and sexually transmitted infections and for halting or reversing the HIV epidemic in the Region have increased substantially in the past few years. Most countries have shown political commitment, mobilized resources and developed or updated strategies for scaling-up prevention, treatment and care. Funding for HIV programmes solely from the Global Fund and the World Bank allows the majority of low-income and low-middle-income countries to rapidly expand access to prevention and care services. HIV treatment coverage has been improved and the number of PLHIV on ART has increased. The number of countries that have baseline information on HIV prevalence among most-at-risk populations has increased. Voluntary counselling and testing and prevention of mother-to-child transmission of HIV services have been expanded in most countries. High-risk groups are of particular focus in the Region. By sustaining these efforts and initiatives, better HIV control may be achieved in the Region.

Knowing their HIV status has still not become a viable option for most people at risk of HIV infection in the Region. Limited access to confidential HIV testing services, lack of risk awareness, fear of stigmatization and discrimination in families, communities, at schools and workplaces, including the violation of human rights are all factors contributing to this situation. Moreover, the common policy of mandatory testing demands huge investments in testing of low-risk populations, while failing to reach high-risk populations, except if they are accessible through arrest or health care admission. Regional HIV testing data show that such policies have failed to identify substantial numbers of HIV infected people. To achieve increased coverage with HIV services, policies need to be focused on attracting people at

high risk to voluntary and confidential counselling and testing with linkages to HIV prevention, care and support. The health sector bears responsibility for reducing the stigma related to HIV among health workers. This can be achieved by ensuring that health workers have knowledge of HIV related clinical signs and symptoms in order to initiate HIV diagnosis at an early stage and promote client and provider-initiated voluntary and confidential HIV testing and counselling services.

Surveillance, monitoring and evaluation systems in most countries do not provide reliable information on the distribution and trends of HIV/AIDS and sexually transmitted infections, vulnerability in the population and the coverage and quality of services. Therefore, it is important to improve surveillance and programme monitoring. Particular attention should also be shown to HIV testing and counselling, ART and prevention of mother-to-child transmission, blood safety, sexually transmitted infections control, HIV prevention and care and targeting those at most risk, such as injecting drug users, men who have sex with men and sex workers.





Vision 5

Halving the
burden of
tuberculosis
— working
towards
elimination

Our vision is to eliminate tuberculosis in the lifetime of the first child born in this millennium, thereby having a region free from tuberculosis by 2050. Our mission is to ensure universal access to tuberculosis care. In doing so, our target is to halve the number of cases and deaths in the Region and reverse the expansion of this preventable and curable disease.

Vision 5

Summary

The Eastern Mediterranean Region contributed about 7% of worldwide tuberculosis cases in 2009. Approximately 660 000 new tuberculosis cases emerged in 2009. Afghanistan, Pakistan, Djibouti, Somalia and Sudan contribute 83% of the regional tuberculosis burden, with Pakistan harboring 63% of the disease burden in the Region. An estimated 24 000 cases of multidrug-resistant tuberculosis occurred in 2009.

The regional Stop TB Plan outlines the actions and funding needed over a 10 year period to 2015 to stop tuberculosis. The goal and vision of this plan is a tuberculosis-free region, which ensures that the first children born this millennium will witness the elimination of tuberculosis in their lifetime. The regional plan focuses on expanding and improving the quality of DOTS, encouraging new approaches such as public-private mix, scaling-up health systems and tuberculosis suspect management through the Practical Approach to Lung Health strategy, managing drug resistant tuberculosis, supporting HIV/tuberculosis collaborative activities, expanding active case-finding among high risk groups and promoting operational research.

All national tuberculosis programmes have adopted the Stop TB strategy and most have developed national strategic plans. Population coverage with DOTS, the basic package that underpins the Stop TB strategy, reached 97%, laboratory coverage has expanded and culture services and drug susceptibility testing have improved. Notification rates have improved significantly in 2009, reaching 28 and 70 per 100 000 population for smear-positive tuberculosis and all tuberculosis forms, respectively. The estimated incidence rate was 111 per 100 000 population and case detection rate was 63% in 2009, which fell short of the 2005 target of 70%.

Most countries have started public-private and public-public mix initiatives, which have contributed to improved accessibility to standard tuberculosis care. The regional average of treatment success for new smear-positive tuberculosis was 88% for the 2008 cohort, which was higher than the global target of 85%. Tuberculosis care was provided to PLHIV in many countries, but care was not always universal. Although 19 national tuberculosis programmes provided data about HIV testing to tuberculosis patients in 2009, it was not comprehensive, as evidenced by the average regional HIV testing coverage of 9.8%.

Box 5

Epidemiological classification of tuberculosis burden in the Eastern Mediterranean Region

- **High burden countries** have an estimated incidence of all forms of tuberculosis of 100 or more per 100 000 population. These countries include Afghanistan, Djibouti, Pakistan, Somalia and Sudan.
- **Middle burden countries** have an estimated incidence of 50–99 per 100 000 population. These countries include Iraq, Morocco and Yemen.
- **Intermediate burden countries** have an estimated incidence of 25 to 49 per 100 000 population. These countries include Bahrain, Libyan Arab Jamahiriya, Kuwait and Qatar.
- **Low burden countries** have an estimated incidence of less than 25 per 100 000 population. These countries include Egypt, Islamic Republic of Iran, Jordan, Lebanon, Oman, Saudi Arabia, Syrian Arab Republic, Tunisia, United Arab Emirates and Palestine.

Why is reducing the burden of tuberculosis important?

The Eastern Mediterranean Region contributed about 7% of worldwide tuberculosis cases in 2009. The estimated number of tuberculosis cases in the Region was around one million in 2009. Approximately 660 000 new tuberculosis cases emerged in 2009 and of these about half are sputum smear-positive pulmonary tuberculosis. Afghanistan, Pakistan, Djibouti, Somalia and Sudan contributed 83% of the tuberculosis burden in the Region, with Pakistan alone shouldering 63% of cases (Box 5). The estimated number of tuberculosis deaths in 2009 was 99 000, with the five high-burden countries contributing 88% of deaths.

The WHO declared tuberculosis a global emergency in 1993 and developed the DOTS strategy to control tuberculosis. Since then, efforts have been made to establish strong national tuberculosis

programmes, expand partnerships and unite stakeholders, in order to control the disease more effectively. Despite the rapid expansion of DOTS and strong efforts of tuberculosis control programmes and partners, Stop TB Targets were not achieved. One of the main reasons for low case detection was a lack of involvement of all health care providers in diagnosis and treatment of tuberculosis cases. In addition, other challenges emerged that affected the efforts of tuberculosis control activities against multidrug-resistant tuberculosis, tuberculosis/HIV co-infection and low awareness in communities. As a result, the WHO developed a new Stop TB strategy (Box 6).

Strategies to control tuberculosis

The regional Stop TB plan outlines the actions and funding needed over 10 years to stop tuberculosis in the Region. The vision of this plan is a tuberculosis-free region, which ensures that the first children born this millennium in the Region

Box 6

Global Stop TB Strategy

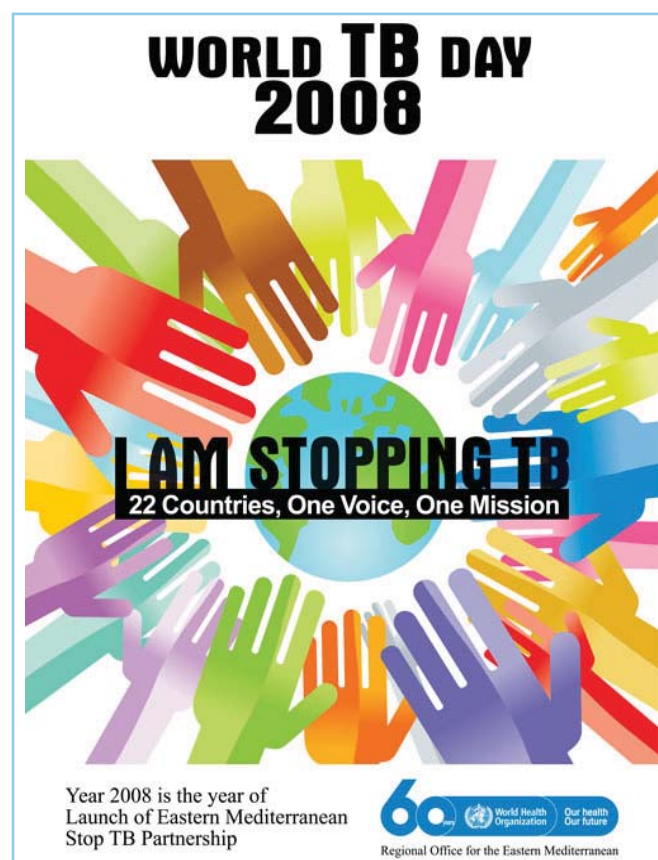
The Global Stop TB Strategy was developed in 2006 by WHO and Stop TB partners. The primary goal is to reduce dramatically the global burden of tuberculosis by 2015, in line with the MDGs and the Stop TB Partnership targets. The objectives are to achieve universal access to high-quality diagnosis and patient-centred treatment, to reduce the suffering and socioeconomic burden associated with tuberculosis, to protect poor and vulnerable populations from tuberculosis, tuberculosis/HIV and multidrug-resistant tuberculosis and to support development of new tools and enable their timely and effective use.

will witness the elimination of tuberculosis in their lifetime. The regional plan is in line with the tuberculosis-related targets of the MDGs, which are:

- that the incidence of tuberculosis should be halted and reversed by 2015 compared with their levels in 1990;
- that tuberculosis prevalence and death rates should be halved by 2015 compared with their levels in 1990.

The regional plan focuses on improving the quality of DOTS, encouraging new approaches such as public-private mix, managing drug-resistant tuberculosis, strengthening health systems and suspect management through the Practical Approach to Lung Health strategy, supporting HIV/tuberculosis collaborative activities and advocacy, communication and social mobilization activities. The following strategies were adopted in light of the regional plan.

- The Stop TB Strategy should be adopted by all countries and included as national policy and multi-year national strategic plans and national tuberculosis control guidelines are to be developed and implemented accordingly.
- Policy and technical support should be provided to all countries so that they can establish high-quality tuberculosis care and continue to achieve the global targets for tuberculosis control.
- Effective drug management systems should be established or strengthened in all countries and regular access to high-quality tuberculosis medicines ensured, either through national resources and/or with help of the Global Drug Facility and other international partners.
- Effective and comprehensive tuberculosis laboratory networks should be established or strengthened in all countries that utilize direct smear microscopy, culture and drug susceptibility testing and external quality assessment.
- Effective, regular and rigorous monitoring and evaluation systems for tuberculosis control, programme performance and tuberculosis epidemiology should be established in all countries, through computerized surveillance tools.



- Effective systems for suspect management should be established in all countries covering primary health care and other tuberculosis stakeholders to ensure universal access to proper tuberculosis care.
- Effective systems for active tuberculosis case detection among high-risk groups should be established or strengthened.
- Functional national partnerships for tuberculosis control should be established in all countries that contribute to sustainable financing of tuberculosis control. An Eastern Mediterranean partnership to stop tuberculosis should be established to mobilize additional financial and technical support.
- Operational research activities should be incorporated as a core function into national tuberculosis control programmes in all countries.

Progress towards achieving the tuberculosis targets

Good progress has been made in expanding tuberculosis care, based on the WHO-recommended Stop TB strategy. In the Eastern Mediterranean Region, 418 149 tuberculosis cases

Table 2

Case notification and treatment outcome trends in the Eastern Mediterranean Region, 2000–2009

	2000	2001	2002	2003	2004	2005	2006	2007	2008 ^a	2009 ^b
All forms of tuberculosis										
Cases	141 748	165 904	191 744	207 375	235 943	287 352	322 306	378 895	397 601	418 149
Notification rate ^c	29	34	38	40	45	54	59	68	68	70
Smear-positive tuberculosis										
Cases	60 959	69 101	76 125	81 313	94 775	113 864	131 882	155 572	166 052	168 013
Notification rate ^c	13	14	15	16	18	21	24	28	28	28
Case detection rate (%) ^d	25	28	32	34	39	46	51	59	60	63
Treatment success rate (%)	83	83	84	83	83	83	86	88	88	—

Source: Year 2000–2007 data obtained from *Global tuberculosis report 2009*.

^a Data for 2008 obtained from *Global tuberculosis control: a short update to the 2009 report*.

^b Data obtained from *Global tuberculosis report 2010*

^c Case notification rate per 100 000 population

^d Case detection rate data were revised retrospectively according to the latest revision reported in the *Global tuberculosis report 2010*.

were notified in DOTS areas during 2009, of which 168 013 were new smear-positive tuberculosis cases (Table 2). Notification has increased since 2000, when 141 748 tuberculosis cases were reported, of which 60 959 were smear-positive cases. The regional case detection rate increased from 25% in 2000 to 63% in 2009. Pakistan, which has 64% of the disease burden in the Region,

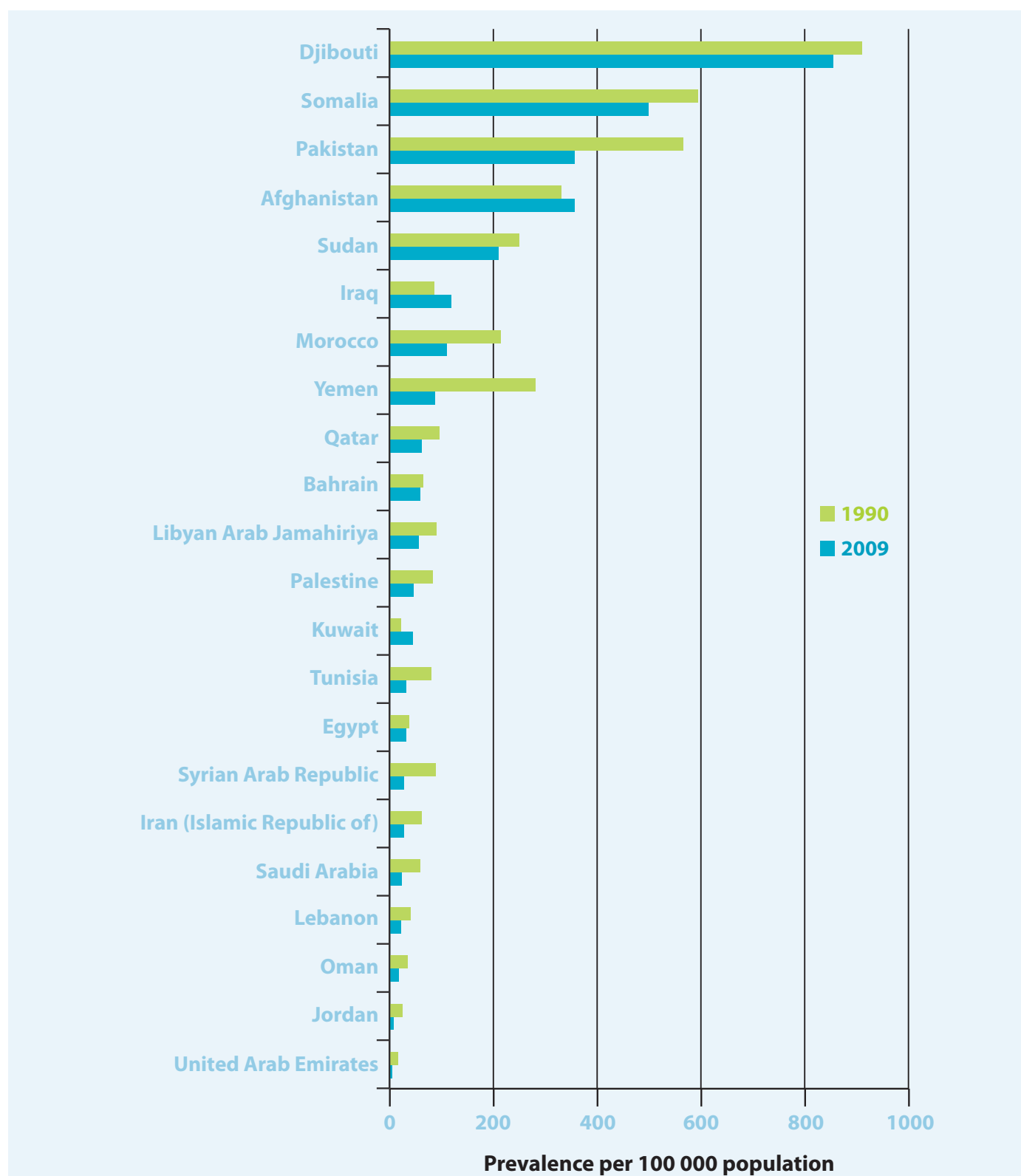
increased its notification rate from 140 per 100 000 population in 2008 to 148 per 100 000 population in 2009, for all cases of tuberculosis. The regional average of treatment success rate was 88%, which is higher than the global target of 85%. Of 22 countries in the Region, five countries (Bahrain, Morocco, Oman, Qatar and Tunisia) achieved both targets in 2009.



The incidence and prevalence of tuberculosis has decreased in recent years (Figure 8). By 2009, the incidence of tuberculosis had reduced to 111 per 100 000 population, compared to 121 per 100 000 in 1990 (92% of the baseline figures). A more notable decrease in prevalence has been observed, dropping from 268 per 100 000 population in 1990 to 179 per 100 000 per population in 2009. Deaths due to tuberculosis have decreased from 34 per 100 000 population in 1990, to 18 per 100 000 in 2009.

DOTS expansion and enhancement

DOTS coverage has expanded in most countries of the Region between 2005 and 2009, mainly due to enhanced political commitment and resources provided through the Global Fund. The majority of expansion occurred in Afghanistan, Iraq and


Figure 8
Tuberculosis prevalence in countries of the Eastern Mediterranean Region, 1990 and 2009

Yemen. All national tuberculosis programmes have adopted the Stop TB strategy and most have developed national strategic plans. In Afghanistan, Djibouti, Somalia and southern Sudan, the national tuberculosis programmes rely entirely on external donors such as the Global

Fund, whereas in other countries, governmental financial contribution varies from less than 30% to 100%. Improving laboratory services is an important part of enhancing DOTS. A summary of progress in laboratory services is provided in Table 3.

Table 3

Summary of progress in enhancing laboratory services

Laboratory service	Progress
Direct smear microscopy	<ul style="list-style-type: none"> External quality assessment is available for all laboratories in six countries.
Sputum smear microscopy	<ul style="list-style-type: none"> Provided free of charge in all diagnostic facilities.
Culture facilities and services	<ul style="list-style-type: none"> Available in all countries except Afghanistan, Djibouti and Somalia. Afghanistan, Iraq, Pakistan, Sudan, Syrian Arab Republic and Yemen have low coverage (one per five million population). Remaining countries have less than one laboratory per five million population.
External quality assessment	<ul style="list-style-type: none"> Less than 50% of laboratories in 10 countries have no or low external quality assessment system coverage. External quality assessment is provided for all culture laboratories in Egypt, Kuwait, Morocco, Qatar, Saudi Arabia, Sudan, United Arab Emirates, Syrian Arab Republic and Yemen.
Drug susceptibility testing	<ul style="list-style-type: none"> Testing is available in all countries except Afghanistan, Djibouti, Palestine and Somalia. External quality assessment for drug susceptibility testing is available in Bahrain, Egypt, Islamic Republic of Iran, Jordan, Kuwait, Morocco, Oman, Pakistan, Qatar, Saudi Arabia, Sudan, Syrian Arab Republic and Yemen. Remaining countries do not have external quality assessment for drug susceptibility testing.
National reference laboratories	<ul style="list-style-type: none"> Laboratories are available in all countries except Afghanistan, Palestine, Saudi Arabia, Somalia and United Arab Emirates. Laboratories are linked to supranational reference laboratories in the Islamic Republic of Iran, Jordan, Lebanon, Morocco, Oman, Sudan, Syrian Arab Republic and Tunisia. Djibouti, Iraq, Libyan Arab Jamahiriya and Saudi Arabia are in the process of linking their national reference laboratory to their supranational reference laboratory.

All countries used internationally recommended and standardized tuberculosis treatment regimens. All countries, except Pakistan, Afghanistan and northern Sudan, used the 6-month regimens for Category I. Afghanistan, Djibouti, Iraq, Pakistan, Sudan and Syrian Arab Republic were supported by Global Drug Facility grants for first-line drugs during 2007–2009. Egypt, Iraq, Jordan, Sudan, Somalia and Syrian Arab Republic were partially supported by the Global Drug Facility for first- and second-line drugs.

Surveillance, monitoring and evaluation systems have improved in most of the Region, allowing most countries to submit quarterly reports to the Regional Office through the web-based surveillance system, *DOTS Quarterly* online. Revised recording and reporting systems have been adopted by most countries and the revised tools are routinely used in Djibouti, Egypt, Islamic Republic of Iran,

Iraq, Jordan, Libyan Arab Jamahiriya, Morocco, Tunisia and Yemen. The remaining countries are in different stages of introducing it. Egypt, Iraq, Jordan, Somalia, Syrian Arab Republic and Yemen introduced a case-based computerized system known as the Electronic Nominal Recording and Reporting System. During 2009, implementation began in Bahrain, Oman, Qatar, Saudi Arabia and United Arab Emirates. Other computerized case-based systems are used in Bahrain, Islamic Republic of Iran, Oman, Palestine and Qatar.

The importance of impact measurement was highlighted by the formation of the WHO Global Task Force on Tuberculosis Impact Measurement in 2006 and the WHA60.19 resolution, which requires Member States to report on their progress in achieving the 2015 global targets for tuberculosis control. The Task Force has identified 21 countries in

Light Committee projects. Other countries are also developing their Green Light Committee proposals. Proposals from Iraq and Somalia were approved at the beginning of 2010. The regional coverage with appropriate care for people with multidrug-resistant tuberculosis was only 4% in 2009, highlighting the urgent need for rapid scaling-up of this initiative.

The Green Light Committee initiative helps countries gain access to high-quality second-line anti-tuberculosis drugs so they can provide treatment for people with multidrug-resistant tuberculosis. Djibouti, Egypt, Jordan, Lebanon, Morocco, Pakistan, Sudan, Syrian Arab Republic and Tunisia have approved Green Light Committee projects. Other countries are also developing their Green Light Committee proposals. Proposals from Iraq and Somalia were approved at the beginning of 2010. The regional coverage with appropriate care for people with multidrug-resistant tuberculosis was only 4% in 2009, highlighting the urgent need for rapid scaling-up of this initiative.

During the 56th meeting of the Regional Committee a resolution for multidrug-resistant tuberculosis management was issued in response to World Health Assembly resolution WHA62.15 on prevention and control of multidrug-resistant tuberculosis and extensively drug-resistant tuberculosis. The Regional Committee endorsed a regional strategic plan to scale-up the response of countries to treat multidrug-resistant tuberculosis. The goal of the strategic plan is to ensure that all countries achieve universal access to diagnosis and treatment of multidrug-resistant tuberculosis and extensively drug-resistant tuberculosis by 2015. The specific objective of the strategic plan is that all countries will receive the support needed to scale-up their response, in order to establish universal access to quality multidrug-resistant tuberculosis management by 2015. The expected outcomes of the strategic plan include:

- creating protocols and standards for multidrug-resistant tuberculosis care;
- drafting country-specific strategic plans, guidelines and training modules;
- improving legislation to assist in multidrug-resistant tuberculosis management activities;



- training health-care professionals to become trainers;
- scaling-up NTP capacity in the areas of diagnostic laboratories, infection control, clinical management, monitoring and evaluation and drug management;
- involving all health-care providers;
- implementing advocacy, communication and social mobilization activities;
- conducting operational research;
- developing human resources to enable the establishment of a regional network for multidrug-resistant tuberculosis management and providing the necessary technical support.

Engaging all health-care providers

Countries in the Eastern Mediterranean Region have made considerable progress in public-private mix activities during the past few years. Collaboration with private health-care providers was expanded and almost all countries have introduced the revised recording and reporting system where the contribution of the private and public non-NTP providers can be measured. In Pakistan, approximately 15% of patients are now detected by the private and public sector that are outside of the national tuberculosis programme. During 2007–2009, review missions noted that

the national tuberculosis programmes had started collaborations with key non-national tuberculosis programme health-care providers, including prison services, university hospitals, nongovernmental organizations and the private sector. Afghanistan, Egypt, Lebanon, Pakistan, Somalia, Syrian Arab Republic and Yemen have drafted guidelines for public-private mix involvement schemes, while Iraq, Sudan and Tunisia are in the progress of drafting guidelines. In Bahrain, Lebanon, Oman and Qatar, all non-national tuberculosis programme providers are engaged in tuberculosis control, either by referring tuberculosis suspects to the national tuberculosis programme, referring their diagnosed cases or notifying their treated cases to the programme. The proportion of cases detected by non-national tuberculosis programmes providers constituted one third or more of the total tuberculosis cases in Jordan, Lebanon and Syrian Arab Republic, whereas only 25% were detected in the Islamic Republic of Iran.

Empowering people with tuberculosis and communities

During 2005–2009, Stop TB initiatives provided technical assistance to address capacity gaps in advocacy, communication and social mobilization in Afghanistan, Pakistan, Djibouti, Egypt, Jordan, Iraq, Morocco, Somalia and Sudan. With support from the Stop TB Partnership in Geneva, several training courses and study tours were organized for national tuberculosis programmes managers and WHO field teams from the Region. Since the launch of the Eastern Mediterranean Partnership to Stop TB in May 2008, technical assistance on national partnership creation and strengthening has been initiated in Afghanistan, Djibouti, Egypt, Morocco, Kuwait, Pakistan, Somalia, Sudan and Syrian Arab Republic.

During 2005–2009, World Tuberculosis Day was met in the Region with enthusiasm and active participation of most countries. One notable campaign that occurred on the eve of World Tuberculosis Day in 2009, was the gathering of more than 2 million young people in the Region. More than 20 countries in the Region actively participated in the "I am stopping TB – Million

Youth March" campaign in March 2009, with more than 2 million people gathering in streets, playgrounds and educational institutions to raise their voice for stopping tuberculosis.

Challenges in achieving regional targets

Between 1997 and 2009, more than two million tuberculosis patients were cured in the Region. However, national tuberculosis programmes are not reaching all patients, mainly due to low DOTS coverage and non-involvement of all sectors. At the regional level, only 2% of the existing private and public providers were engaged with the national tuberculosis control programme. As a result, only 13% of the detected cases were detected by private and public providers, while reports indicate that around two thirds of the population seeks initial care at these providers. Furthermore, in some countries the quality of diagnosis is poor and access to laboratory diagnosis is not always ensured. This is because of incomplete coverage of laboratory networks and incomplete introduction of quality assurance systems.

Drug-resistant tuberculosis was found in all eight countries of the Region that have conducted tuberculosis drug resistance surveys. In seven of these countries, multidrug-resistant tuberculosis



was found among new tuberculosis cases, ranging from 0.5% in Morocco to 5.4% in Jordan. Three countries (Bahrain, the Islamic Republic of Iran and United Arab Emirates) reported cases of extensively drug-resistant tuberculosis. The HIV epidemic has started to have an impact on tuberculosis in the Region. In Djibouti, Somalia and Sudan, which are in the generalized epidemic stage of HIV, HIV seroprevalence is 9.9%, 13.8% and 4.4% among tuberculosis patients, respectively. The data are still limited, however, an estimated 10 560 tuberculosis patients are infected with HIV in the Region.

Low financing for tuberculosis control programmes is a concern, with most high-burden tuberculosis countries relying on external funding. In these countries, the Global Fund is the main donor for tuberculosis programmes. Although the number of tuberculosis cases is increasing due to improved laboratory services and initiating public-private mix activities, sustaining these activities in the long-term remains a challenge. Complex emergencies are also an important challenge in the Region. Countries that have a high burden of tuberculosis are usually under conflict and face frequent natural disasters. Afghanistan, Iraq and Sudan have low case detection rates because tuberculosis care is not always accessible due to security issues.

Halving the burden of tuberculosis — working towards elimination

Tuberculosis care services have expanded and improved in almost all countries of the Region. Most countries have adopted the Stop TB strategy, DOTS population coverage reached 97%, laboratory coverage has expanded and culture services and drug susceptibility testing have improved. Most countries in the Region have started public-private and public-public mix initiatives, which has contributed to improved accessibility to standard tuberculosis care. Eleven countries had halved their prevalence and mortality rates by 2009 compared to 1990. The remaining countries were at various stages of reaching their targets. However, all countries have adopted the expanded Stop TB Strategy and have made progress in its implementation.



The expansion of the global tuberculosis control strategy has had a positive effect on progress in reducing the prevalence of tuberculosis in all Eastern Mediterranean countries.

In 2009, WHO moved towards universal access to services for all tuberculosis patients, in order to enhance progress towards the 2015 targets. However, the Region was only able to detect 63% of the existing cases. Limited collaboration with different health-care providers, particularly private health-care providers in high-burden countries, was the main reason for low case detection. There is a general perception that detecting missing cases, which constitute around 40% of the estimated regional burden, is likely to be managed mainly by providers not yet linked to the national tuberculosis programmes. Therefore, an important challenge will be to increase the engagement of all care providers in tuberculosis care and control. Engaging large hospitals and academic institutions in tuberculosis care and control has been weak at the regional level. Specific barriers to service access and use should be addressed and effective solutions should be designed to tackle problems using local solutions for local problems. Additionally, countries are invited to further strengthen the process of identification of tuberculosis suspects in different health facilities at all levels of the health system and to promote active case finding among high-risk groups. At the same time we should not ignore the threat of multidrug resistance. Management of multidrug resistance and the scaling-up of laboratory services and infection control measures needed to address it place a significant burden on health systems.



Vision 6

Containing new and re-emerging disease threats

Our Region must be prepared to respond rapidly to any emerging or re-emerging disease threats. The earlier a disease threat is identified, the easier it is to contain. With the extension of global air travel, neglected local disease threats can quickly spread and become global emergencies.

Vision 6

Summary

The Eastern Mediterranean Region is a centre of international travel for trade, tourism and religious purposes and has a large turnover of expatriate workers. As a result, it is exposed to new and emerging infectious diseases. Therefore, the Regional Office has an important role to play in ensuring countries are prepared for disease outbreaks. As such, the main objectives are to provide technical support to countries during public health emergencies and to support them in achieving the minimum epidemiological and laboratory core capacities required for strengthening national and regional surveillance, alert and response systems to respond to any event that might be of international concern in line with the International Health Regulations (2005).

The Regional Office has implemented several initiatives to support outbreak preparedness including establishing the Regional Alert, Surveillance and Detection of Outbreak Network, the Eastern Mediterranean Regional Network for Infection Control and the International Health Regulations Regional Task Force. In addition, publication of the Weekly Epidemiological Monitor has provided epidemiological updates on disease outbreaks and other public health events.

Many communicable diseases emerged in recent years and were contained successfully by the countries through support from the Regional Office. Sudan faced outbreaks of Ebola haemorrhagic fever, Rift Valley fever and yellow fever, while Pakistan contained an outbreak of avian influenza A/H5N1 and Yemen contained dengue fever. Although early warning, surveillance and response systems and epidemic preparedness have been improved in some countries, most countries are not equipped sufficiently to deal with an outbreak. In these countries, technical capacity is weak and they lack the necessary surveillance and diagnostic services. Resources are not sufficient for even simple preparedness measures and priority is given to treatment programmes

Why are communicable disease surveillance and response important?

Global concern of emerging and re-emerging diseases has grown considerably in the last decade, sparked by the HIV/AIDS and viral haemorrhagic fever epidemics and, most recently, by severe acute respiratory syndrome (SARS), avian influenza and pandemic (H1N1) 2009. Several new pathogens have emerged during the past three decades and some have great epidemic potential and constitute real public health threats (Table 4). Other organisms and diseases that had been under control for many decades re-emerged as a public health problem. The continuous emergence of new strains and resistance to the commonly used antimicrobial agents aggravates the problem. The spread of new and re-emerging diseases is usually associated with trade and population movements. Globalization has increased the inter-connectedness of the world and expansion in trade and air travel has created situations conducive to the emergence and spread

of public health threats. Today, once a new threat emerges in one area, it can rapidly spread all over the world and threaten global health security. The spread of pandemic (H1N1) 2009 from Mexico to all continents was a prime example.

The nature of the Eastern Mediterranean Region as a centre of international travel related to trade, tourism and religion and having a large turnover of expatriate workers, exposes it to new and emerging infectious diseases. The goal of regional communicable diseases surveillance and response programmes is to minimize the direct and indirect burden of epidemic-prone diseases on countries, such that the epidemic-prone diseases no longer pose a public health concern at a national or international level. The main objectives are to provide technical support to countries during public health emergencies and assist them in achieving the minimum epidemiological and laboratory core capacities required for strengthening national and regional alert and response systems in line with the International Health Regulations (2005).

Table 4

Emerging diseases in the Eastern Mediterranean Region

Disease	Prevalent countries
Dengue fever	Djibouti, Pakistan, Saudi Arabia, Somalia, Sudan and Yemen
Rift valley fever	Egypt, Saudi Arabia, Somalia, Sudan and Yemen
Yellow fever	Sudan
Crimean-Congo haemorrhagic fever	Afghanistan, Islamic Republic of Iran, Iraq and Pakistan
Al-Khumra haemorrhagic fever	Saudi Arabia
Meningococcal meningitis due to <i>Neisseria meningitidis</i>	Saudi Arabia and Sudan
Cholera outbreaks	Afghanistan, Djibouti, Iraq, Islamic Republic of Iran, Pakistan, Somalia, Sudan
Human avian influenza	Djibouti, Egypt, Iraq and Pakistan
Avian influenza	Afghanistan, Kuwait, Palestine, Saudi Arabia and Sudan
Monkey-pox	Sudan
Acute toxic jaundice (Gulran disease)	Afghanistan
Thallium poisoning	Iraq
Hepatitis E	Sudan
Sand fly fever	Lebanon
Nodding disease	Sudan

Strategies for containing new and re-emerging disease threats

Implementation of the communicable diseases surveillance and response regional strategic plan focuses on:

- strengthening national early warning, surveillance and response systems and epidemic preparedness;
- establishing a regional capacity to implement the International Health Regulations (2005);
- providing prompt and appropriate technical support to countries during outbreaks of epidemic-prone diseases that occur within or threaten countries of the Region
- Disseminating within WHO weekly updates on current events that might constitute public health emergencies of international concern through its Weekly Epidemiological Monitor;
- promoting infection control programmes at the country level;
- providing a forum for exchange of information, experiences and lessons learnt from or related to detection and field response to outbreaks;
- supporting the establishment of centres of excellence in the field of epidemiology, surveillance, vector control for insect-borne viral haemorrhagic fevers, infection control and laboratory diagnosis of emerging infections;
- promoting research on emerging and re-emerging diseases.

Progress in communicable diseases surveillance and control

In recent years, many of the global threats that have emerged and re-emerged have also been of concern to the Eastern Mediterranean Region. Avian influenza, SARS and pandemic (H1N1) 2009 were among the important public health emergencies which highlighted the importance of having rapid surveillance and control systems in place. The emergence of communicable diseases during natural and human-made disasters is a real concern in a region which, in recent years, has witnessed earthquakes in Pakistan, floods in Djibouti and Sudan, drought in Somalia and

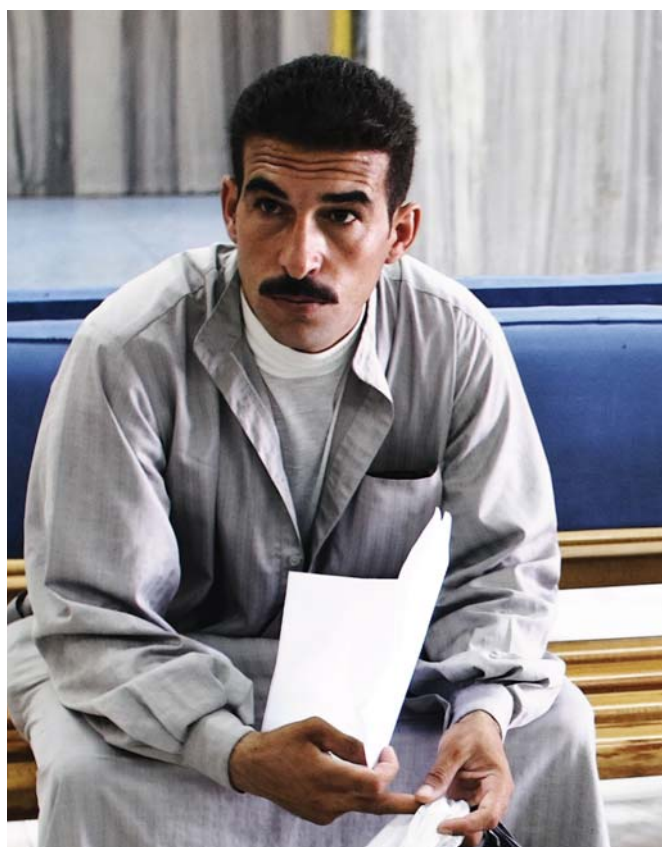


complex emergencies in Afghanistan, Iraq and Sudan resulting in large numbers of internally displaced persons.

International health regulations (2005)

The International Health Regulations were first adopted by the World Health Assembly in 1969 and initially covered six diseases. The regulations were amended in 1973 and 1981. Due to the increase in international travel and trade and the emergence and re-emergence of international disease threats, a substantial revision of the regulations was carried out in 2005 and the revised regulations came into force on 15 June 2007. The International Health Regulations (2005) provide a global framework to prevent, detect, assess and provide a coordinated response to events that may constitute a public health emergency of international concern and other acute public health risks that have the potential to cross borders and threaten people worldwide. This makes them a necessary and very timely public health instrument, central to ensuring international public health security.

The International Health Regulations (2005) require Member States to notify WHO of all events that may constitute a public health emergency of international concern and to respond to requests for verification of information regarding such events. This will enable WHO to ensure appropriate technical collaboration for effective prevention of such emergencies or containment of outbreaks and, under certain defined circumstances, inform other States of the public health risks where action is necessary on their part. A detailed plan of action was developed to ensure successful implementation in the Region. The plan defines the road map for the Regional Office to assess the core epidemiological and laboratory capacities of Member States to detect and respond to public health emergencies that might be of international concern. An International Health Regulations Regional Task Force was established to coordinate the work of the Regional Office with regard to implementation. Related assessment tools have been developed and training activities are planned. International Health Regulations coordination played a critical role in the response to pandemic (H1N1) 2009 as Secretariat for the Emergency Committee and through its many guidance and support activities.



Eastern Mediterranean regional network for infection control

The Eastern Mediterranean Regional Network for Infection Control was established to minimize the risk of infection within health care settings in the Region. The network will bring together infection control organizations for communication, consensus building, education, sharing expertise and fostering development of infection control organizations where they are needed. Currently, a bulletin provides a forum to share information and activities in countries and articles on infection control practice. A web site is being developed which will provide information about activities, and a forum for networking with organizations and agencies and for sharing best practice. The Regional Office also supports basic infection control training activities and meetings and provides training materials. It promotes establishment of governmental and/or nongovernmental national infection control bodies in all countries, establishment of infection control units at health care facilities and development of appropriate relevant health regulations. It encourages research activities in different aspects of infection control, including on economic evaluation and the effectiveness of different interventions and helps identify additional means and resources to mobilize funds for the effective implementation of infection control activities. It contributes to the setting of guidelines for long-term epidemic preparedness and capacity-building and advises on new opportunities and applications to improve infection control activities.

Weekly Epidemiological Monitor

The *Weekly Epidemiological Monitor* is a weekly bulletin which the Regional Office has produced since 2008. Its aim is to share information within WHO on outbreaks in the Region and to provide credible, timely and concise information about public health events that might constitute public health emergencies of regional or international concern. Its sources are the official reports of such public health events provided by the countries. The bulletin provides a unique forum for reporting

public health events in a transparent and timely manner. It may also help to alert national public health authorities about any impending or evolving public health threat that warrants a collective response.

Promoting and strengthening epidemic preparedness

The Regional Office is actively involved in promoting preparedness for epidemic and pandemics, especially in high-risk countries of the Region through technical support and capacity building. During 2005-2009, considerable progress was achieved in this area.

A regional plan on pandemic influenza preparedness and response was developed to complement the global preparedness plan. This will enhance the capacity of countries to pre-empt an influenza pandemic, as well as to mitigate the negative effects of a full-blown pandemic. Most countries developed national plans for epidemic preparedness and response to outbreaks of meningitis, cholera, viral haemorrhagic fevers and other epidemic-prone diseases. The Regional Office provided technical support for developing, field testing and operationalizing the national preparedness plans for human pandemic influenza.

National capacity-building for epidemic forecasting, preparedness and rapid response was supported through field epidemiology training programmes or similar training programmes in epidemiology. There is a remarkable disparity between countries with regard to availability of human capacities. In many countries, a shortage of trained epidemiologists has been aggravated by rapid turnover and migration of trained health personnel to other countries. Field epidemiology training programmes have greatly assisted in human resources development, appropriate outbreak investigation and improvement of communicable disease surveillance.

Regional stockpiles of drugs and medical supplies were maintained for rapid response to outbreaks and pandemics. Integrated communicable diseases



surveillance was promoted and surveillance of antimicrobial resistance was introduced in several countries. The role of the private sector was strengthened in disease surveillance in several countries. Surveillance data management was computerized at the central and intermediate levels in the majority of countries. The capability of the central public health laboratories in the high risk countries for diagnosing viral diseases of national importance was strengthened. Geographical information systems were established in several countries. A roster of experts at national and regional levels was maintained.

An early warning and response network in southern Sudan continued to play a major role in early detection and rapid response to the frequent outbreaks there. A sentinel influenza surveillance system was established in the Holy cities of Saudi Arabia to study influenza activities during the Hajj season, with sentinel sites in some other major cities.

Successful containment of outbreaks

The Regional Office provided timely and appropriate support in outbreak situations to

combat the introduction or spread of outbreaks of epidemic-prone diseases within countries, across borders or through dynamics of people or goods. Such support was provided to affected countries through:

- early detection of outbreaks to minimize morbidity and mortality;
- dispatch of experts in response to government requests;
- providing supplies and equipment for strengthening national laboratory capacities;
- providing information on diseases and disease control measures;
- coordinating international investigation teams;
- disseminating information during outbreaks to national authorities and the public;
- writing proposals to potential donors;
- leading coordination of the efforts of different partners;
- organizing post-outbreak workshops in order to draw lessons learnt on experiences.

Rift Valley fever – Sudan 2007

On 18 October 2007, the Sudanese Ministry of Health requested WHO support to investigate and control a suspected haemorrhagic fever outbreak in White Nile and Sinnar states. By 15 January 2008, a total of 698 human cases of Rift Valley fever had been identified in Sudan, resulting in 222 deaths (case fatality rate of 31.8%). The Regional Office led a response team that provided technical support in preparedness for viral haemorrhagic fever and other seasonal outbreaks and in the procurement of essential supplies, enhancing surveillance and training activities, including entomological surveillance and vector control. The field team included staff from the Food and Agriculture Organization of the United Nations (FAO) and field diagnostics capacity from the U.S. Naval Medical Research Unit No. 3, a WHO collaborating centre for emerging infectious diseases based in Cairo, Egypt.

Avian influenza A/H5N1 – Pakistan 2007

On 21 October, 2007 an outbreak of highly pathogenic avian influenza was identified at a



poultry farm near Abbottabad, in the North-West Frontier Province of Pakistan. The Pakistan health authorities requested WHO to provide technical support in the ongoing investigations of several suspected human cases of avian influenza A/H5N1 virus infection. After thorough epidemiologic investigation by the international investigation team and testing of clinical specimens by the H5 reference laboratory and WHO collaborating centres, three cases of avian influenza A/H5N1 infection cases were confirmed.

Avian influenza A/H5N1 – Egypt 2006

As of 21 December 2009, 90 cases of human A/H5N1 had been reported in Egypt. With great transparency, the Ministry of Health and Population reported 50 confirmed cases of human A/H5N1 infection, including 20 deaths (case fatality rate of 44%), as well as detailed statistics on the number of suspected cases of avian influenza and the number of influenza virus isolates recovered from poultry. There has been no evidence of an epidemiological link between human cases that indicate human-to-human transmission; all cases had contact with sick and dead poultry prior to illness onset. Control measures included control of wildlife reservoirs, culling of affected poultry at

infected farms, restriction of movement of poultry between governorates, screening, vaccination of poultry, disinfection of infected premises and intensive health education programmes to increase public awareness.

Yellow fever – Sudan 2005

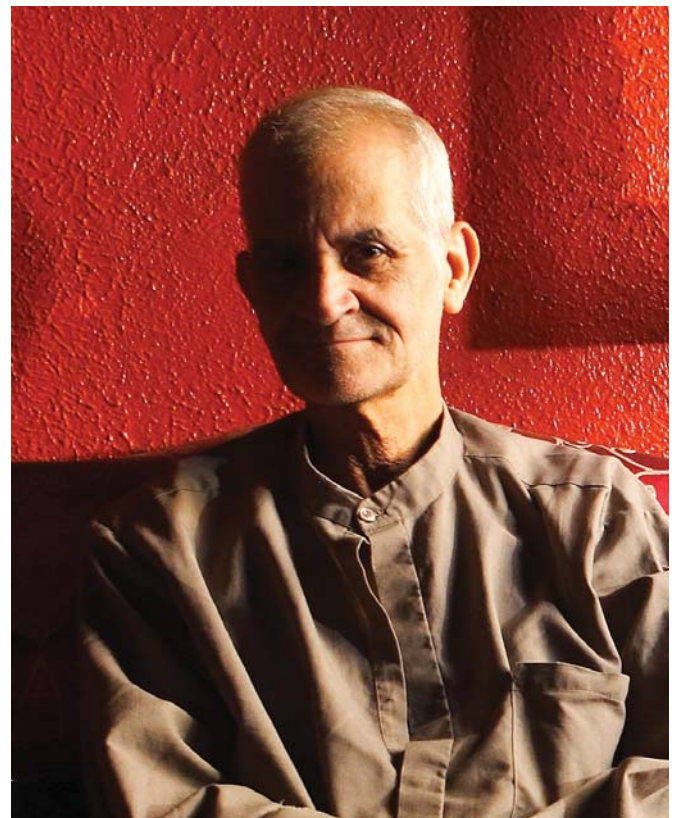
As of 6 December 2005, the Sudanese Federal Ministry of Health had reported to WHO a total of 565 cases of yellow fever, including 143 deaths, with a case fatality rate of 25.3%. The WHO, International Committee of the Red Cross, International Federation of Red Cross and Red Crescent Societies, Médecins Sans Frontières – France, Medair and UNICEF worked with the Federal and State Ministries of Health in the vaccination campaign, social mobilization, vector control, case management, surveillance and laboratory support. Additional assistance was also provided by an international team from the Global Outbreak Alert and Response Network. The European Commission Humanitarian Aid Department provided 2 million Euros to support the vaccination campaign, treatment, surveillance and vector control activities. About 1.7 million doses of yellow fever vaccine were shipped to Sudan for this outbreak.

Dengue fever – Yemen 2005

As of 17 April 2005, 392 cases of dengue fever had been reported from Al Hudaydah Governorate, Yemen, 172 from Al Hudaydah City (8 deaths, case fatality rate of 4.7%) and 100 from Zabeed City (7 deaths, case fatality rate of 7%), while the other cases occurred in some 18 villages in the area. The last suspected case of dengue was reported on 30 April 2005.

Pandemic (H1N1) 2009

All countries of the Region responded quickly to pandemic (H1N1) 2009. A large-scale public awareness campaign was implemented in the Region to improve preparedness. Vaccination



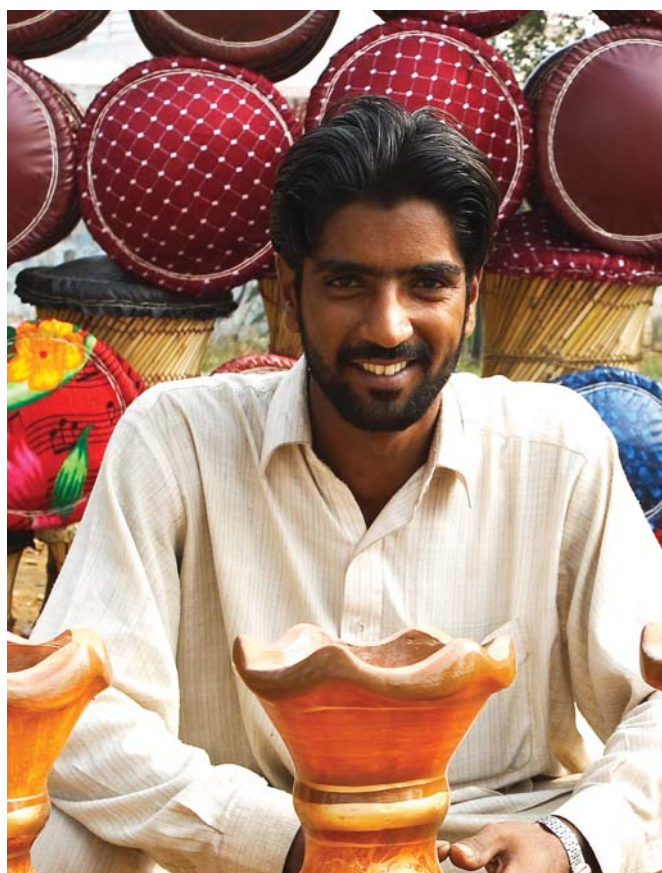
campaigns against pandemic influenza were launched in Bahrain, Egypt, Jordan, Kuwait, Morocco, Oman, Qatar, Saudi Arabia and United Arab Emirates. All of these countries selected Hajj pilgrims, health-care workers, pregnant women and other high-risk groups as priority groups to receive the vaccine. Pandemic influenza transmission was geographically regional in most countries in the Region, except in Morocco and Jordan, where transmission was localized.

Challenges in containing new and re-emerging diseases

Public health emergencies readily reveal the strengths and weaknesses of national surveillance and response preparedness. The ability of countries to respond to these emergencies varies, depending on the nature of the event, the adequacy of political commitment in preparing the country for such events and the allocation of funding at the national level. In several countries, containment ability was affected by the inadequate allocation of WHO funds for surveillance, a lack of trained health personnel, internal conflicts and large numbers of refugees and internally displaced persons.

Many countries have been affected by political instability and man-made and natural disasters. These situations can contribute greatly to disruption of health services and communicable disease surveillance systems and to the spread of infectious diseases. The large population displacement due to war, internal conflict, drought and flooding in several countries increased the chance of outbreaks and hindered early detection and rapid response. The control of communicable diseases in many countries has been further impeded by a lack of security and accessibility to health care facilities and services.

It is not surprising that countries facing challenges with communicable diseases also have weak health systems and inadequate health services. In these countries, health systems are often more treatment-driven than prevention-oriented and infectious disease preparedness is not a priority. Public health is generally not a focus and public health laboratories are poorly equipped and inadequately staffed. Public health laboratory data are not used in national efforts to monitor resistance and are not internationally accessible.



Efforts to collaborate and coordinate with other national sectors, such as animal health, are inadequate. The general public is not adequately involved in surveillance or disease control and some national authorities may even hide information about these diseases. The media are not given access to report accurately on events, which leads to the reporting of inaccurate or scientifically incorrect information.

Has the Region been successful in containing new and re-emerging disease threats?

The implementation of the International Health Regulations (2005) has improved communicable diseases surveillance in the Region and the Regional Office has now moved towards integrated disease surveillance. Epidemic and pandemic preparedness has been enhanced through capacity-building and strengthening national public health laboratories. Many communicable diseases emerged in recent years and were contained successfully by the countries through support of the Regional Office.

Although early warning, surveillance and response systems and epidemic preparedness have been improved in some countries, most countries are not equipped sufficiently to deal with an outbreak. In these countries, technical capacity is weak and the necessary surveillance and diagnostic services are lacking. Resources are not sufficient for even simple preparedness measures and priority is given to treatment programmes. Therefore, a focus on improving preparedness, through proper implementation of the International Health Regulations (2005) needs to be achieved through:

- national epidemiological capacity-building;
- strengthening national public health laboratories;
- establishing regional reference laboratories;
- carrying out cross-border joint surveillance activities;

- the positioning of contingency supplies for rapid response;
- promoting transparency in reporting of public health emergencies of international concern.
- developing comprehensive contingency plans at the points of entry.

Building surveillance and response capabilities should be a priority for the containment of known epidemic-prone infections, emerging infectious risks and unexpected disease threats, including those that may be deliberately initiated, through global epidemic intelligence and global outbreak alert and response.





Technical support for Global Fund-related activities

The Global Fund to Fight AIDS, Tuberculosis and Malaria was created in 2002 to dramatically increase resources to fight three of the world's most devastating diseases. To date, the Global Fund has approved 64 grants with anticipated grants obligations of US\$ 1.5 billion to the 14 eligible countries of the Eastern Mediterranean Region. The Global Fund is the largest international donor for HIV/AIDS, tuberculosis and malaria care in the Region. The Regional Office and the country offices in these 14 countries are heavily engaged in Global Fund-related activities. The Regional Office staff who are responsible for HIV, tuberculosis and malaria spend 30%–50% of their time on Global Fund-related activities, such as technical support for proposal development, grant negotiation and implementation and active participation in country coordinating mechanisms. Engagement is particularly strong in nine countries, where the country offices act as a sub-recipient for Global Fund grants. Moreover, in five of the nine countries (Iraq, Palestine, Somalia, Sudan and Syrian Arab Republic), the Global Fund adopted the Additional Safeguard Policy, whereby country offices act as major sub-recipient under the principal recipient to manage the majority of the grants. Country offices are sub-recipients for 23 grants in nine countries, with total funding of US\$ 34.8 million. Of this amount, about US\$ 3.4 million was allocated for programme support costs (13% for activities and 3% for procurement).

Achievements

The Regional Office has played a critical role in supporting countries and WHO country offices for Global Fund-related activities through:

- overall grant management activities;
- facilitating proposal development, including direct technical support for organization of proposal development workshops and workshops for peer review of draft proposals;
- support for grant negotiations, particularly in the areas of procurement, supply management plans and monitoring and evaluation system strengthening tools;
- support for grant implementation by providing technical and operational guidance during grant implementation and conducting joint monitoring missions with the Global Fund to identify implementation bottlenecks and propose solutions;
- coordinating and facilitating technical advice to countries on assessing the burden of disease, measuring impacts of the grants and setting priorities;
- disseminating Global Fund policy and technical updates with countries and WHO country offices;
- employing a full-time staff member in the Regional Office to work exclusively on Global Fund-related activities.



Support for operational research in communicable diseases

The Regional Office supports operational research in communicable diseases through the Small Grants Scheme. The objectives of the scheme are to support projects that contribute to the prevention and control of communicable diseases, collaborate with control programmes in translating research results into policy and practice and strengthen research capacity in the Region. The strategic approaches to achieve these objectives include:

- evaluating new/improved tools, including drugs, vaccines and diagnostics, that are devised for prevention and control of infectious diseases;
- evaluating new/improved intervention methods for applying existing and new tools at clinical and population levels;
- evaluating new/improved public health policies;
- forging a close link between researchers and local control programme management personnel;
- monitoring and evaluating the implementation of research results by the control programmes;
- disseminating research results to aid in the prevention and control of communicable diseases.

Progress of the small grants scheme

The scheme has played an important role in the promotion and implementation of the research activities in the countries of the Eastern Mediterranean Region. The scheme is now widely known to researchers in the Region, as reflected by the number of applications received between 2005 and 2009. More than 1000 proposals were submitted during 2005–2009, around 14% of which were successful in obtaining support

(Figure 9). The selection of proposals was based on the scientific merit and relevance of the project to the control programme, as well as the country's research needs.

The research capacity of countries was strengthened through research methodology workshops, follow-up visits, recruiting consultants and on-line technical support for proposal development, data management and scientific writing.

Dissemination of research and translation of research findings into policy and practice

The results of research funded through the Small Grants Scheme are published on the tropical disease research web site (www.emro.who.int/tdr), through press releases, events and the Small Grants Scheme final report series. Four portfolios have been published since 2001 and one multi-country study on tuberculosis was published in 2006. More than 100 articles, originating from Small Grants Scheme-supported projects, have been published in indexed journals and 33 articles were published in a special issue of the *Eastern Mediterranean Health Journal*. For the purposes of translating research findings into policy and practice, letters and final reports were sent to national control programmes and undersecretaries of research in Ministries of Health, incorporating the findings and recommendations of the studies. Other activities included hosting the Disease Reference Group on zoonotic and marginalized infectious diseases and the Research Task Force at the Regional Office.

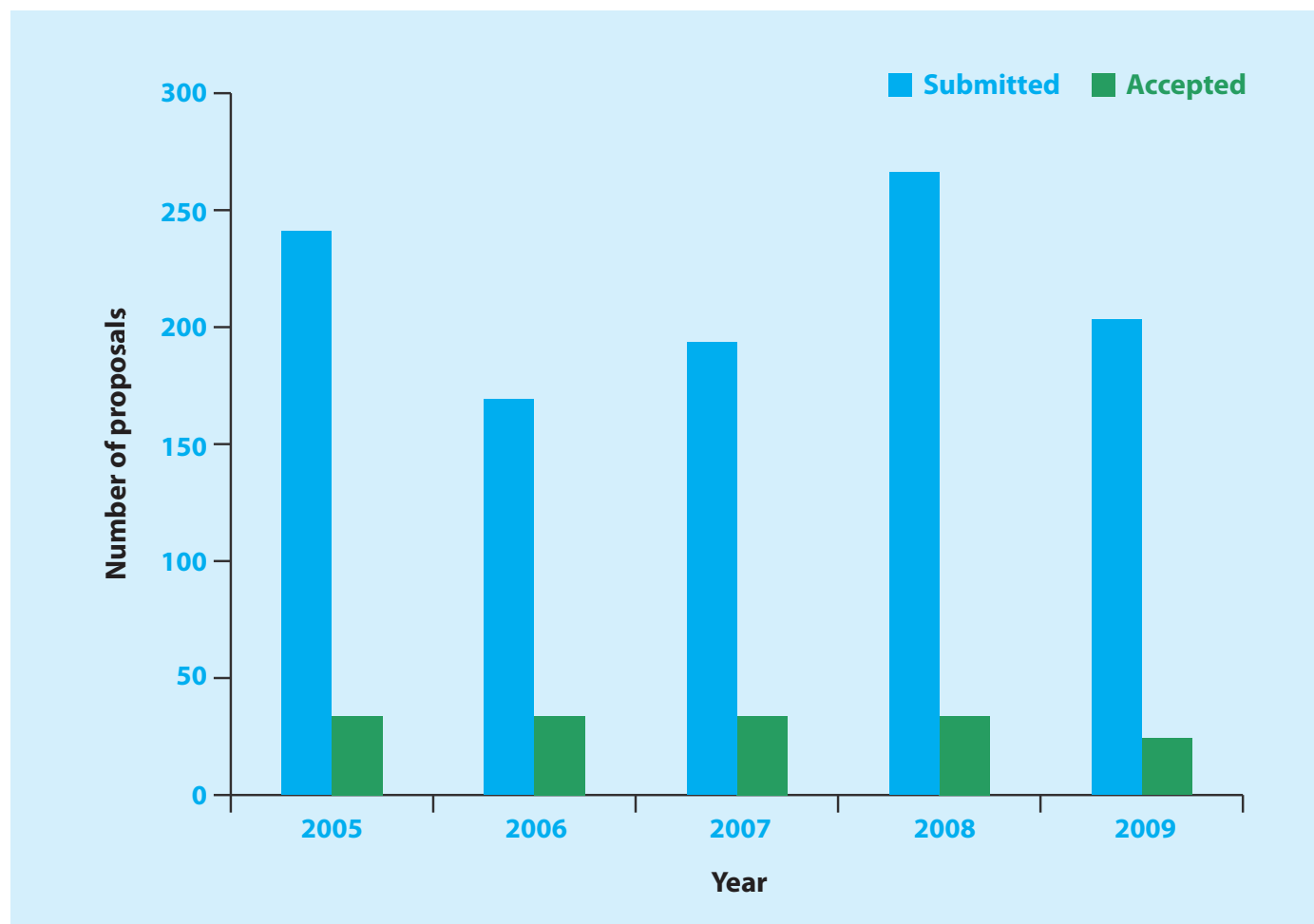


Figure 9

Small Grants Scheme proposals submitted and accepted during 2005–2009

Future directions

In the next biennium, one selection committee will be used and key research priorities will be rationalized. More projects will be commissioned from reputable institutions, rather than through independent selection and substantial funds will

be allocated to technical support and monitoring missions for quality of project implementation and dissemination of research findings. Importantly, the Region will be represented at tropical disease research meetings in WHO headquarters to provide regional input and expand the areas of collaboration.



The way forward

In order to achieve the regional goals related to communicable diseases, the Regional Office is planning to adopt a sub-regional integrated approach. The main objectives behind this approach are to identify the common constraints that still hinder the implementation of the regionally recommended strategies for communicable disease control and to propose more integrated and specific solutions, including a more adequate and operational input from the Regional Office. The aim is to focus on important and cross-cutting areas of work, such as surveillance, the International Health Regulations, information sharing, data management and use of data for action. National commitment will be enhanced for ensuring success and sustainability of the disease surveillance programmes. Resources will be mobilized for strengthening surveillance and response, especially for countries in complex emergencies. Integrated surveillance will be promoted to be more productive and cost-effective.

By strengthening surveillance systems and improving water and sanitation conditions for at-risk populations, the Regional Office aims at intensifying the capabilities of the Member States to eradicate their tropical diseases. For success of the tropical disease programmes, stronger coordination with countries through multi-partner support will be promoted. The role of both the public and private sectors in controlling tropical diseases will be enhanced. This is critical for Sudan, as the dracunculiasis eradication goal is close to being achieved and for Yemen, where the Regional Office will strengthen its technical support of the national schistosomiasis control programme. Where tropical disease

programmes have succeeded in controlling diseases and maintaining low endemic levels, such as with schistosomiasis and leprosy, it is crucial to maintain public health awareness and support from decision-makers. These factors can ultimately affect the risk of resurgence of diseases and the preparedness to respond to emerging challenges such as treatment resistance. Capacity to implement integrated vector control will be improved. Most of the disease burden due to vector-borne diseases in the Region is found in Sudan (60%). Efforts to reduce the regional disease burden will have to focus attention in Sudan..

Mortality due to vaccine-preventable diseases will be reduced. Among the vaccine-preventable diseases, the elimination of measles will be the main priority in the Region. Measles outbreaks will be prevented through supplementary immunization activities and follow-up campaigns. Access to high quality and regular immunization services will be enhanced in Somalia and southern Sudan. The utilization and accessibility of new life-saving vaccines, such as pneumococcal and rotavirus vaccines, will be also improved in all countries of the Region.

The Regional Office will continue to support countries in scaling-up disease-specific strategies and expanding partnerships with the Global Fund and others. The regional HIV epidemic cannot be reversed without reaching out and providing preventive services to the people who are most at risk due to high-risk sexual and drug-injecting behaviours. Ensuring that voluntary and confidential HIV testing and counselling is available to people at increased risk of HIV will remain a high priority in the Region. Access to

ART will be improved. In The regional strategic plan for malaria control and elimination will be updated. The Regional Office will continue to support universal access to reliable and affordable prevention, diagnosis and treatment measures for malaria and capacity-building. In high transmission areas in the southern zone of Somalia and southern Sudan, substantial reduction of transmission will be achieved with full-scale deployment of the available tools. Commitment and support to the remaining endemic areas will be maintained in order to consolidate the achievements and proceed towards elimination in the remaining areas and foci. Scaling-up of tuberculosis care to achieve 70% case detection as well as scaling-up of care for people with multidrug-resistant tuberculosis will receive focus. Key targets will be three supra-national laboratories, universal adoption of revised recording and reporting, revision of estimates in five countries, expansion of multidrug-resistance care and public–private mix in 18 countries, and national partnerships in six countries.

