

WORLD HEALTH ORGANIZATION
Regional Office for the Eastern Mediterranean
ORGANISATION MONDIALE DE LA SANTE
Bureau régional de la Méditerranée orientale



مَنْظَرَةُ الصِّحَّةِ الْعَالَمِيَّةِ
المكتب الإقليمي شرق المتوسط

**Regional Committee for the
Eastern Mediterranean**

EM/RC58/INF.DOC.1
July 2011

Fifty-eighth Session

Original: Arabic

Agenda item 2 (b)

**Progress report on
Eradication of poliomyelitis**

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1. Introduction

At its 61st session in May 2008, the World Health Assembly called for the development of a new strategy to reinvigorate the fight to eradicate poliomyelitis from the remaining affected countries (WHA61.1). Consequently, a comprehensive independent evaluation of major barriers to interrupting poliovirus transmission was made for endemic countries and those with re-established transmission. From the Eastern Mediterranean Region, Afghanistan, Pakistan and Sudan were evaluated. The evaluation findings and recommendations were submitted to the Sixty-third World Health Assembly in 2010, together with the new Global Polio Eradication Initiative Strategic Plan 2010–2012, which includes specific milestones to be achieved to reach the target of cessation of all poliovirus transmission by end of 2012. The Health Assembly welcomed the plan.

Progress in achieving the milestones is regularly monitored by the Independent Monitoring Board using the process indicators developed for this purpose.

2. Current situation in the Eastern Mediterranean Region

Ongoing crises faced in the Eastern Mediterranean Region, man-made and natural, have had a negative impact on polio eradication efforts, particularly in the two remaining endemic countries, Afghanistan and Pakistan. Despite these challenges, the Region continued to proceed towards achieving the polio eradication target, with 19 Member States maintaining their polio-free status and Sudan successfully regaining its polio-free status after an epidemic that occurred as a result of importation in 2008.

2.1 Pakistan

Pakistan has come a long way in its struggle to eradicate polio. In the early 1990s the annual incidence of polio was estimated at more than 20 000 cases a year. Since its initiation in 1994, the national polio eradication programme has made major strides in reaching children with immunization in all parts of the country, resulting in a decrease in the number of cases to a low of 28 cases in 2005. However, since then progress has been hampered by instability and war in border areas with Afghanistan, limiting safe access to children. The programme has also faced varied managerial problems in certain areas, with the result that children in key high-risk areas do not receive adequate doses of oral poliovaccine (OPV). As a result of these factors, the number of cases of polio increased annually to reach 89 in 2009. The high-risk areas comprise four zones: Federally Administered Tribal Areas (FATA); Khyber Pakhtunkhwa (KP) province; the Quetta block in Baluchistan; and Karachi towns of Gadap, Baladia and Gulshan E Iqbal. More than three quarters of cases are reported from these high-risk districts. As well, most wild viruses reported from cases in other areas are genetically linked to those of high-risk areas.

To address this situation, considerable efforts have been made by the polio eradication programme, particularly the introduction of bivalent OPV (bOPV), the development of comprehensive district-specific plans, improvements in the monitoring system through introduction of finger-marking and independent monitoring and focusing on intersectoral collaboration in polio eradication. At the same time, emphasis is placed on maintaining comprehensive surveillance system supported by a well-functioning polio laboratory.

After evidence of some improvement in the epidemiological situation in the first half of 2010, the country experienced a devastating flood, resulting in significant population movement, mostly from high-risk areas to polio-free areas, massive destruction of the health infrastructure and disruption of health care services. The result was a significant increase in the number of cases, including in many previously polio-free areas, during the last 5 months of 2010. The total number of cases in 2010 reached 144, the highest number since 2000.

Pakistan is taking major steps forward to address the constraints facing effective implementation of polio eradication strategies. The President of Pakistan has directed the immediate development of an emergency action plan for polio eradication in Pakistan. The goal of the plan is to stop transmission of polio in Pakistan by the end of 2011 through consistent government oversight, ownership and accountability at each administrative level, ensuring consistent access to children in security-compromised areas, and ensuring that all children are consistently immunized in the areas and populations that are at highest risk of sustaining transmission of poliovirus. Oversight and accountability by government officials has been improved through the establishment of high level task forces and monitoring cells at national and provincial levels to follow up progress.

District-specific plans are now being translated into Union Council plans to address local issues and devise local solutions, starting with those Union Councils with persistently low performance in vaccinating children. In this regard, the establishment of the Union Council level polio eradication team is a significant development. The teams are led by the basic health unit medical officer and supported by the revenue and education departments. As well, the composition of teams is shifting from volunteers to government workers (lady health workers, teachers) to ensure more accountability for their performance.

Monitoring of campaign performance is being tightened through the introduction of lot quality assurance (LQA) and the use of new technology in rapid data transmission from the field continued with rapid analysis and feedback of results for immediate remedial measures. Environmental surveillance is also being expanded to other parts of the country to determine the dynamics of poliovirus circulation, highlighting the importance of vaccinating the migrant population.

There are some early signs of positive epidemiological developments. Since November 2010, no cases have been reported in Punjab (>50% of the total population), and no wild poliovirus type 3 (WPV3) isolates have been detected from acute flaccid paralysis (AFP) or environmental samples.

2.2 Afghanistan

In Afghanistan, the programme remained successful in keeping poliovirus circulation limited to the southern part of the country and in protecting the rest of the country from possible spread as a result of importation from neighbouring infected countries. More than 80% of the population lives in areas without any established circulation.

The vast majority of cases are reported from the 13 conflict-affected districts in the south, where security problems are the main reason for the inaccessibility of children. A wide range of approaches is being implemented by the national programme to ensure access to children in these conflict-affected areas. These efforts included district-specific planning, hiring district managers, special training for staff implementing supplementary immunization activities, and the addition of de-worming and communication efforts.

The national working group meets every month under the chairmanship of Her Excellency the Minister of Public Health to monitor the situation and provide guidance on policy and strategic issues. This is a very clear indicator of the strong political commitment to eradicate polio from Afghanistan. A consultative group, chaired by the Director-General of Preventive Medicine, was established to discuss innovative approaches to improve access and campaign quality in the 13 high-risk districts. This is another step forward to achieving a breakthrough in the southern region. At the same time, efforts are continuing to sustain good coverage in all accessible areas.

To address the increased risk of importation to Afghanistan following the recent intensified circulation in the bordering FATA/KP area of Pakistan and outbreak in Tajikistan, the programme

is conducting mop-ups and vaccination of children crossing borders and enhancing the sensitivity of surveillance. Coordination between the polio eradication programmes of Pakistan and Afghanistan is exemplary.

2.3 Sudan

The last reported case of polio in Sudan was in June 2009 following the outbreak that started in 2008, after successful efforts to immunize children everywhere in Sudan. The surveillance system has also been strengthened. Routine surveillance data, together with the desk review conducted in 2010 in south Sudan and the full surveillance review by international experts in April 2011, show that the system is functioning reasonably well overall.

The recent isolation of a WPV from a sewage sample from Aswan, Egypt, linked with poliovirus circulation in Sudan 2008–2009 indicates a possible surveillance gap. In response to this observation, field investigation was conducted in both Egypt and Sudan, including rapid assessment of the AFP surveillance system, mapping population movement between Sudan and Aswan and OPV coverage assessment.

Immunization coverage in south Sudan is still below the targets of the Global Strategic Plan (<10% missed children in each supplementary immunization activity in 2010). Efforts to achieve this goal are continuing under very challenging circumstances.

2.4 Somalia

Somalia has been polio-free since 2007 and continues to exceed the international AFP surveillance standards. A surveillance desk review was conducted in June 2010 and its recommendations are being implemented.

The major challenge in Somalia is reaching all children with OPV. In 2010, over 800 000 children under the age of 5 years (40% of the national total) were inaccessible due to the refusal of anti-government elements to allow mass vaccination activities in the central and southern zones. As a result, a significant population immunity gap is developing in these zones, where vaccine-derived polioviruses (VDPV) have been repeatedly identified since 2009.

Several efforts are continuing to address the shrinking population access for both national immunization days and child health days, without success so far.

3. Implementation of polio eradication strategies

3.1 Routine immunization

Improving routine EPI services and coverage continues to be one of the cornerstone strategies for polio eradication. At least 25% of polio field staff time is contributed to immunization system strengthening. This includes implementing the “reach every district” (RED) approach (district microplanning) as well as assessing cold chain facilities. Vaccination status of AFP cases is used for identifying areas of suboptimal performance of routine immunization. As well, during supplementary immunization activities, vaccination staff record zero routine dose for children under one year of age.

3.2 Supplementary immunization activities

Seven polio-free countries in the Region (Djibouti, Egypt, Islamic Republic Iran, Iraq, Jordan, Saudi Arabia and Syrian Arab Republic) conducted supplementary immunization activities in 2010 with a focus on geographic areas with high-risk populations and low routine immunization coverage in an effort to boost population immunity. In addition, several initiatives were introduced in the programme, namely use of the very effective bivalent OPV, and independent monitoring of supplementary immunization activities.

In 2010, Pakistan implemented 6 national immunization day campaigns (NIDs), 4 subnational campaigns (SNIDs) and 6 mop-ups, and Afghanistan carried out 4 NIDs, 4 SNIDs and 4 mop ups. South Sudan carried out 4 NIDs and northern Sudan implemented 3 NIDs and one SNID, and the Child Health Day campaign also included OPV. Somalia implemented 2 phased NIDs, and OPV was given during 5 phased Child Health Days.

NIDs and SNIDs were implemented using either bOPV or tOPV, but mop-ups were implemented using monovalent vaccines and in some occasions bOPV. Most of the vaccine used in Child Health Days was tOPV.

Several key operational steps were taken to improve the quality of supplementary immunization activities. These included the following.

- Engaging political and administrative leaders for oversight and to ensure accountability.
- Ensuring updated district-specific plans and specific plans at lower levels, including Union Council plans.
- Strengthening communication efforts with focus on increasing public awareness and demand generation.
- Use of the short interval additional dose strategy in areas with accessibility problems.
- Monitoring supplementary immunization activities coverage by independent monitors and market surveys. LQA was introduced in December 2010 in Pakistan to assess the validity of reported coverage data.

3.3 Surveillance for acute flaccid paralysis

Key AFP surveillance indicators (non-polio AFP rate and percent of adequate stools) at national level are reaching international standards. All countries of the Region have maintained the expected non-polio AFP rate per 100 000 children under the age of 15 years. The percentage of AFP cases with adequate stool collection is above the target of 80% except in Morocco. However, subnational data analysis has highlighted certain gaps which are more significant for these countries with no evidence of transmission for the past five years. The data are being used to direct activities to improve operations in these countries.

In 2010, AFP surveillance reviews were conducted in eight countries of the Region: Afghanistan, Egypt, Lebanon, Morocco, Somalia (desk), south Sudan (desk), Tunisia and Yemen. These reviews have shown that the systems are functioning well. Some recommendations highlighting further actions needed for the improvement of system were made and are being seriously considered by the national authorities.

Circulating VDPV were identified in some areas in Afghanistan and Somalia, reflecting the challenges facing routine EPI coverage in these areas.

Environmental monitoring continues to prove its usefulness as an additional surveillance tool. It is continuing in Egypt and was expanded in Pakistan to cover important cities such as Karachi, Lahore, Multan, Rawalpindi, Peshawar and Quetta.

All countries are providing AFP surveillance data to the Regional Office every week. These data are analysed, published in Poliofax and sent to countries on a weekly basis.

Risk assessment for WPV outbreak following importation

The situation in the polio-free countries of the Region is reviewed regularly using the risk assessment model developed by the Regional Office to assess the risk for WPV outbreak following importation. The objective of these reviews is to timely alert countries to any possible

outbreak, help in decision-making with regard to prioritizing technical assistance and provide data for advocacy and funding requests.

Recent risk reviews highlighted Somalia and Yemen as high-risk countries with alarming numbers of unvaccinated children and large proportions of unprotected children.

3.4 Regional poliovirus laboratory network

The regional poliovirus network laboratories are maintaining certification-standard performance indicators. The workload of the laboratory network is immense. During 2010, nearly 27 000 specimens from cases and contacts were processed, which is 4% more than in 2009. Overall, 94% of specimens had culture results within 14 days, 98% had intratypic differentiation (ITD) results within 7 days of positive virus culture and in 97% of AFP cases, the final laboratory testing results were provided within 45 days of paralysis onset. WPV and VDPV continue to be detected with speed and accuracy. The rRT-PCR methods for characterization of polioviruses have been implemented in ITD laboratories.

The regional reference laboratory in Tunis has been accredited as the second WHO poliovirus nucleotide sequencing laboratory, in the Region, in addition to the Pakistan regional reference laboratory, which is providing good quality and timely nucleotide sequencing results of all programmatically important polioviruses isolated from AFP and environmental samples. Bio-safety training modules were introduced in all regional network laboratories in 2010.

3.5 Improving the quality of life of polio patients

The regional polio eradication programme continued providing polio-affected children with the treatment needed for physical as well as social rehabilitation. Treatment services include physiotherapy, provision of orthotics and corrective devices and facilitation of schooling, thus helping polio survivors to become independent and productive members of the community. After the success of this initiative in Pakistan, the Regional Office is now expanding similar services to polio-affected children in Afghanistan.

4. End-game issues

4.1 Laboratory containment of wild polioviruses and potential infective material

This very important activity is meant to minimize the post eradication risk of reintroducing wild polioviruses or Sabin strains from the laboratory to the community particularly after OPV use has been stopped. All country programmes are making plans for the management of this risk at the essential facilities, through the primary safeguard of containment and secondary safeguards of locations.

All countries of the Region except Afghanistan, Pakistan and Somalia have reported completion of Phase 1 laboratory survey and inventory activities for laboratory containment of polioviruses and potential infectious material. All 19 countries that have completed Phase 1 of containment activities were required to submit the quality assurance report. Documentation of the quality of Phase 1 containment activities was submitted by all countries except Lebanon.

4.2 Certification of poliomyelitis eradication

The Regional Commission for Certification of Poliomyelitis Eradication (RCC) held two meetings in 2010. In its first meeting, 4–6 May, abridged annual updates for 2009 from Bahrain, Islamic Republic of Iran, Iraq, Jordan, Kuwait, Lebanon, Libyan Arab Jamahiriya, Morocco, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, Tunisia and United Arab Emirates were discussed, along with final national certification documentation from Egypt and Palestine and annual updates for 2009 for Somalia and Yemen. All were accepted except Lebanon. Lebanon's

abridged annual update was deferred until the NCC could provide evidence that surveillance has improved to the level required for certification.

In its second meeting, 19–20 October, basic national documentation from Sudan was discussed, along with the abridged annual update for 2009 for Djibouti and provisional national documentation for certification for Afghanistan and Pakistan. The basic national document of Sudan was accepted with emphasis on the need to maintain the performance of surveillance and ensure high levels of immunity through improved routine immunization and supplementary immunization activities. Djibouti's abridged annual update for 2009 was deferred due to unsatisfactory performance of the AFP surveillance system. As for the provisional reports of Afghanistan and Pakistan, the RCC expressed appreciation for the efforts of the National Certification Committees and the fact that surveillance efforts have been generally maintained at the expected standard.

5. Technical and financial support to countries

In 2010, WHO technical support to the regional poliomyelitis eradication programme was maintained through the recruitment of 41 international staff supported by another 15 short-term (3 months) officers (STOP team) seconded from the U.S. Centers for Disease Control and Prevention, 33 national professional officers and 248 national medical officers supported by 798 other national staff.

In addition, teams of experts constituting both regional and country technical advisory groups extend technical support to the national programmes on strategic directions. All polio staff are extending support to the Expanded Programme on Immunization (EPI), as well as contributing to other priority and emergency health programmes at country level.

Most countries of the Region continue to provide much of the required resources for the eradication effort, particularly with respect to routine immunization and surveillance. In addition, considerable external financial resources were secured to support national activities, especially operational expenses, technical support and the resources required to continue surveillance activities. External resources provided to support the planned activities through WHO for 2010–2011 are expected to exceed US\$ 120 million. The main contributors of these funds are Rotary International, the Governments of Canada (CIDA), United States of America and United Arab Emirates, Bill and Melinda Gates Foundation, Department for International Development (U.K.), and Governments of Italy, Norway, France, Australia, the Russian Federation and Germany.

6. Coordination with other WHO Regions

Coordination with other WHO Regions, especially the African, South-East Asia and European regions, is continuing in a very satisfactory manner. Surveillance data and important epidemiological information are exchanged on a weekly basis. Efforts are also made to synchronize dates of supplementary immunization activities, or at least ensure cross-border coordination of such activities.

The Horn of Africa (HoA) Technical Advisory Group is an example of close coordination between countries of the African and Eastern Mediterranean Regions. As well, the laboratories in both regions are extending support to each other. Kenya Medical Research Institute (KEMRI) is supporting Somalia and south Sudan, and the laboratory of Sudan is supporting Eritrea. The Regional Office is supporting Nigeria in the development of environmental monitoring.

The Tajikistan outbreak revived the coordination efforts between the Eastern Mediterranean and European regions and MECACAR collaboration. The Pakistan reference laboratory supported molecular sequencing analysis of Tajikistan viruses. The regular participation of representatives

of other regions in regional meetings, such as those of the regional technical advisory group and RCC, ensures exchange of information on lessons learned and useful practices.

7. Regional commitment for polio eradication

The commitment of national authorities in both endemic and polio-free countries to the poliomyelitis eradication goal continues to be at its highest level. The Regional Committee receives annual progress reports and its resolutions set the strategic directions of the programme. The polio eradication programme is directly under the authority of the Regional Director, who personally participates in all important activities and also paid several visits to Pakistan, the high priority endemic country of the Region. Together with the Director-General, he met with His Excellency Asif Ali Zardari, President of Pakistan, who announced an emergency plan of action to interrupt transmission by the end of 2011.

8. Challenges and future directions

Interrupting poliovirus transmission in Afghanistan and Pakistan is the foremost priority of the Region. In Afghanistan, together with all partners, efforts will continue on various fronts to ensure safe access and vaccination of children in the southern region of the country, both for routine and supplementary immunization.

In Pakistan, the key risks to interrupting poliovirus circulation include the unpredictable security situation in FATA, weak management in inconsistent government ownership and oversight and the need for performance-based accountability. Efforts will continue to ensure full implementation of the national emergency action plan.

Maintaining polio-free status in polio-free countries is a challenge as well as an achievement. Risk assessment analysis for polio-free countries will be regularly and judiciously used for the early identification of increased risk in any country and remedial measures taken to address the situation in a timely manner. An example is the increased risk in Yemen, which has been exacerbated by the recent political unrest. As soon as there is an opportunity, supplementary immunization activities will be conducted.

Maintaining certification-standard surveillance in all countries is one of the main challenges. Highly sensitive surveillance programmes are important to ensure real cessation of transmission of WPV. WHO will continue to support national efforts in this regard. As well, WHO will support AFP surveillance reviews and will follow up implementation of their recommendations.

Refusal of anti-government elements in Somalia to allow vaccination of almost 800 000 under-5 children is a major challenge that threatens achievements to date. Efforts will continue and priority will be given to negotiating with these elements to allow vaccination of children.

Optimizing collaboration with EPI to improve the routine EPI coverage will continue in all Member States. Sustaining population immunity will also prevent the occurrence of VDPV.

Coordination and collaboration will be maintained and further strengthened with other WHO regional offices and between neighbouring countries of the Region and other regions.

Securing the financial resources required to implement the regional plan for eradication is an ongoing challenge.