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Progress report on

Eradication of poliomyelitis

Contents

1. Introduction

In 1988, the Regional Committee for the Eastern Mediterranean issued resolution EM/RC35/R.14 adopting the goal of poliomyelitis eradication. Since then, the implementation of eradication strategies has reduced the number of countries endemic for polio in the Eastern Mediterranean Region from 22 countries to only two (Afghanistan and Pakistan). In both countries the intensity of transmission decreased to historically low levels in 2007, as a result of enhanced eradication efforts. However, 2008 witnessed an increase in the number of polio cases reported from Pakistan and Afghanistan and the spread of the virus to areas in Pakistan that previously were free from polio, some for several years.

The epidemics that followed virus importation from Nigeria (2004–2007) affecting consecutively Sudan, Yemen and Somalia, have come to an end with the last case reported from Somalia in March 2007. In 2008, 2 importations were reported in northern Sudan from Chad with no secondary spread. In south Sudan, an outbreak started in June 2008 and resulted in 24 P1 cases. Circulation continued in 2009 and extended to northern Sudan with one case reported from Khartoum and four cases from Red Sea State.

2. Current situation in the Eastern Mediterranean Region

2.1 Regional progress

Intensification of polio eradication efforts continued in 2008 and polio-free status was maintained in 19 countries. However, the total number of cases reported from the Region increased to 175, which is three times the number of cases reported in 2007 (58 cases, representing the lowest number of cases ever reported in the Region). The majority of cases in 2008 were from Pakistan (118 cases), with 31 cases from Afghanistan and 26 from Sudan.

2.2 Highlights on endemic and re-infected countries

Afghanistan and Pakistan

Afghanistan and Pakistan represent a single epidemiologic block as evidenced by the epidemiological and genetic patterns of the viruses isolated from both countries. They share ethnic and cultural traditions and very strong social and commercial links, with considerable population movement between both countries.

The first 6 months of 2008 showed continuation of decrease in the number of polio cases and in the genomic diversity of the viruses isolated from Afghanistan and Pakistan with concentration of cases in the in 2 known transmission zones: the northern zone, comprising most of Northwest Frontier Province (NWFP) and Federally Administered Tribal Areas in Pakistan and the eastern region of Afghanistan; and the southern zone, including the corridor from the southern region of Afghanistan continuing through Baluchistan and southern Punjab into northern and southern Sindh including Karachi. A significant increase in the number of cases started in July 2008 in the reservoir zone in NWFP and in south Afghanistan, with spread to previously polio-free areas particularly in Punjab.

In Afghanistan, cases were reported mainly from 16 districts in 4 provinces in the southern region (Kandahar, Hilmand, Uruzgan and Zabul) and adjacent Farah and Hirat provinces in the western region, except 3 cases from Nangarhar in the eastern region. Cases were mostly due to WPV1 (25 cases), with 6 due to WPV3.

The main reason for continued virus circulation in the southern region despite several supplementary immunization activities (4 NIDs and 5 SNIDs and the addition of the short interval additional doses with mOPV in high risk areas) is the deteriorating security situation and active

fighting hindering safe access to children. The programme continues to use windows of opportunity of improved access to immunize children as well as to advocate with all parties to cease hostilities during supplementary immunization activities to allow access to children by vaccinators. These efforts have allowed limited improvement in access to children in some parts of the southern region. However, this access has not been sufficiently sustained to have a real impact on the immunity profile and hence cessation of transmission. In September 2008, the programme lost two national staff and a driver in a brutal car bombing on their way from Kandahar to Spinboldak.

In Pakistan, the sudden increase in cases starting in second half of 2008 represented an outbreak (25 cases of P3) in Peshawar and the spread of WPV1 to different parts of the country and was most evident in Punjab where a P1 outbreak (31 cases) occurred after 2 years of freedom from WPV1. Wild polioviruses also spread from NWFP to Islamabad (3 P1 and 2 P3) after 5 years without any polio case. Out of the total 118 cases reported from 49 districts and towns, 81 were due to P1 and 37 to P3.

The reasons behind this increase in Pakistan included the sharp decrease in routine immunization from mid 2007, the reduced accessibility of children in security-compromised areas that are endemic foci and the significant population movement out of these areas to other parts of Pakistan. Significant efforts were made on all fronts, including advocacy and supplementary immunization activities. As well, updated provincial plans were prepared for 2009 and efforts made to ensure their implementation. While in 2008 4 NIDs and 7 SNIDs were implemented, the plan for 2009 is to increase the number of nationwide activities to 6 NIDs using tOPV in addition to SNIDs and mop-ups using the appropriate mOPV according to epidemiological developments. New tactics including environmental surveillance and seroprevalence surveys will be added to better understand the reasons for poliovirus persistence in some areas and to guide future strategies.

As part of the advocacy efforts, Dr Hussein A. Gezairy, WHO Regional Director for the Eastern Mediterranean, visited Pakistan and met with HE Mr Yusuf Raza Gillani, Prime Minister of Pakistan, who reaffirmed government commitment to the goal and to the formation of an inter-provincial committee for polio eradication. The Prime Minister also launched an Action Plan for Polio Eradication in Pakistan, focusing mainly on securing the active involvement of other sectors in polio eradication initiatives to ensure a truly national campaign. Coordination continued with Afghanistan in order to optimize simultaneous comprehensive coverage of the border areas and of children on the move.

Sudan

Sudan is a country at high risk of wild poliovirus importation. There is continuous population movement between Sudan and most of its 9 neighbours including families living on both sides of the borders, nomadic population, pilgrims on their way to Saudi Arabia and refugees moving due to insecurity.

Two P3 importations from Chad were recorded in West Darfur in July and December 2008. These importations were not followed by secondary cases, which is a reflection the high immunity level of children and the large-scale high quality immunization response to these importations.

At the same time, following the reporting of 3 P1 cases in Gambella region of Ethiopia, the virus started to appear in south Sudan, resulting in spread to 8 different states with 24 cases in 2008 and 32 more up to May 2009. This was also followed by detection of two related cases in Khartoum and Red Sea states and the spread of virus out of south Sudan to neighbouring countries (Kenya and Uganda). The spread in south Sudan could be explained by the low level of population immunity as a result of weak routine immunization and severe logistic constraints facing NIDs in

the country. Supplementary immunization activities using mainly mOPV1 continue to be conducted since May 2008 synchronized with similar activities in Ethiopia.

The detection of the imported poliovirus in a very remote and insecure area of Darfur in 2007 and 2008 has proved that the surveillance system is sensitive enough to timely detect polioviruses.

3. Implementation of polio eradication strategies

3.1 Routine immunization

High routine immunization coverage of infants is one of the basic strategies of polio eradication. The crucial role of high routine coverage is highlighted by the importation experiences, where imported poliovirus resulted in large outbreaks in countries with low coverage compared with sporadic cases without secondary spread in countries with high routine coverage.

Polio eradication activities continue to support and strengthen routine immunization. The polio eradication workforce helps to strengthen routine immunization. The significant investment made by the polio eradication programme in training various levels of national health workers in micro-planning, campaigns implementation, monitoring and evaluation has increased their capacity to support immunization programmes.

3.2 Supplementary immunization activities

Priority attention continued to be given to implementing supplementary immunization activities, with the aim of ensuring that all children under 5 years are immunized against polio, especially in countries with low routine coverage.

In 2008, about 400 million doses of OPV were given in national and subnational immunization campaigns in the region. Afghanistan and Pakistan carried out supplementary immunization activities throughout the year at 4–6 week intervals. Mop-up activities were also implemented in response to wild poliovirus isolation in Pakistan, Afghanistan and Sudan using the appropriate monovalent OPV. To guard against spread after importation, some polio-free countries conducted campaigns addressing mainly high-risk areas and areas with low routine coverage (Djibouti, Egypt, Iraq, Jordan, Lebanon, Libyan Arab Jamahiriya, Saudi Arabia, Somalia, Sudan, Syrian Arab Republic and Yemen). Opportunities such as measles campaigns and Child Health Day programmes are used to deliver additional doses of OPV.

Campaigns were conducted from house to house, targeting all children less than 5 years of age. Extensive efforts were made to ensure high quality. Commitment of politicians and community leaders was enlisted, multisectoral approaches were implemented to involve governmental and nongovernmental sectors and included intensified social mobilization and supervision activities. Detailed micro-plans with maps were developed and used to reach every child, with special focus on risky areas and difficult-to-reach groups. Monovalent vaccine was used to maximize type-specific immune response. Finger-marking was used to guarantee that no child was missed. Independent monitors observed and assessed outcome of campaigns, and their findings helped to pinpoint problems to be resolved by the responsible authorities. NIDs were coordinated between neighbouring countries and supplementary immunization activities were also used to provide other services, such as delivering life-saving vitamin A and deworming tablets.

3.3 Surveillance for acute flaccid paralysis

The acute flaccid paralysis (AFP) surveillance system in the Region continues to perform at the accepted international standard and even exceed the required indicators in many priority countries. All endemic, infected or recently polio-free countries have maintained a non-polio AFP rate of at least 2 per 100 000 children under the age of 15 years and the same was achieved in many other countries, particularly the ones at high risk of importation. None of the countries of

the Region reported less than the minimum required level of 1 per 100 000 population under 15 years.

The second quality indicator for surveillance (percentage of AFP cases with adequate stool collection) was maintained above the target of 80% at the regional level (90.80%) and in all countries of the Region except in some small countries, where it was slightly lower than the target. These two surveillance indicators are also maintained at certification standard at provincial and district levels within countries.

All countries provide AFP surveillance data on a weekly basis to the Regional Office, where they are analysed and published in the weekly polio fax sent to all countries. As well, the quality of AFP surveillance is assessed through in depth-review missions. With the exception of the security- compromised Palestine, the systems in all countries of the Region have been reviewed by international staff at least once since 2004. These reviews showed that the surveillance systems are adequate to detect any circulating poliovirus or importation. The Regional Office is following up closely the implementation of the recommendations of these reviews.

To maintain high standard surveillance in the Region, the Regional Office updated the regional guidelines. These guidelines were used to update national guidelines and maintain surveillance performance. In addition, two surveillance workshops were implemented in 2008 for member countries of the Gulf Cooperation Council in order to address all needs identified during the reviews.

The Regional Office is working on updating the Information for Action (IFA) database system. During early 2008 three workshops were conducted to train the data management staff in all countries of the Region on the new system. This also represented a chance to build the capacity of staff to analyse the surveillance data. The new systems include a component for data on samples collected from contacts of selected AFP cases.

3.4 Regional laboratory network

The laboratory network continues to support AFP surveillance activities efficiently. All network laboratories passed the WHO proficiency tests for both poliovirus isolation and intratypic differentiation testing and all laboratories are accredited by WHO.

The workload of the network laboratories has increased substantially due to an increase in the number of reported AFP cases and the samples taken from contacts. In 2008, the polio network laboratories in the Region processed 25 823 stool specimens of AFP cases and contacts. The polio network laboratories successfully implemented the new testing algorithms for virus isolation and intratypic differentiation (ITD). With the introduction of the new testing algorithm, 95% of samples had culture results within 14 days and 85% had results of ITD within 7 days. The average reporting time from receipt in laboratory to final ITD results decreased from 13 days in 2007 to 11 days in 2008. The main challenge in implementing the new algorithm has been the increase in workload, resulting in increased resource needs for sample testing supplies and ITD reagents. A new database and data analysis system (LabIFA4) was also successfully implemented to adjust the changes resulting from implementation of the new algorithm.

The regional reference laboratory at the National Institutes of Health in Pakistan continued to perform at exceptionally high standard, serving both Afghanistan and Pakistan. Genomic sequencing of isolated viruses from both countries is also done in the laboratory and is showing an evident decrease in genetic diversity of polioviruses, from 10 sub-clusters in 2005 to 7 in 2006 to 4 in 2007 and 2008.

The real-time PCR method for rapid characterization of polioviruses will be established in polio intratypic laboratories in the Region; in this regard a training workshop was held in January 2009 at the national polio laboratory, Muscat, Oman.

Egypt, which had its last confirmed polio case in may 2004, continues to collect sewage samples from 34 sites covering all governorates, and performance is continuously monitored through NPEV and Sabin virus isolation. An imported wild virus from south Sudan/Ethiopia was detected in Egypt in September 2008 and another one with Indian origin in December, both in greater Cairo. Immediate response with three mop-up rounds was conducted by the Egyptian authorities and heightened surveillance activities have not shown any secondary spread.

There are plans to establish environmental surveillance in Pakistan (Karachi and Lahore) for better understanding of circulation of wild polioviruses and targeting the areas for immunization activities.

In 2007 and 2008, vaccine-derived polioviruses (VDPVs) were isolated from AFP cases who were subsequently confirmed as immunodeficient patients. These included two children in the Islamic Republic of Iran (one with mixture of types 1 and 2, and another with type 2), and one child in Egypt (type 3). Isolates from these cases were classified as iVDPVs. There was no evidence of secondary spread of VDPVs from any of the immunodeficient persons.

4. End-game issues

4.1 Laboratory containment of wild poliovirus and potential infectious material

The Eastern Mediterranean Region continued to make progress in containment activities. Eighteen of the polio-free countries have reported completion of Phase 1 of containment activities, namely laboratory survey and inventory for potentially infectious material. However, Sudan will need to repeat the activities. The process was initiated in Afghanistan, Pakistan, Somalia and Yemen. To date, 19 775 laboratories have been surveyed in the Region and only 9 laboratories have been identified to be storing wild virus material.

All countries that have completed the Phase 1 of containment activities were required to submit the quality assurance report. Documentation of the quality of Phase 1 of containment activities was submitted by 16 countries (Bahrain, Djibouti, Islamic Republic of Iran, Iraq, Jordan, Kuwait, Lebanon, Libyan Arab Jamahiriya, Morocco, Oman, Qatar, Saudi Arabia, Sudan, Syrian Arab Republic, Tunisia and United Arab of Emirates). The original or revised report has not been submitted by 5 countries (Djibouti, Egypt, Lebanon, Palestine and Syrian Arab Republic). Egypt and Palestine recently completed Phase 1 of containment.

4.2 Certification of poliomyelitis eradication

The Regional Certification Commission continued to review various national documents submitted by the National Certification Committees (NCC) of countries in the Region. Basic documents have been accepted from 19 countries and final reports were submitted and accepted from 14 countries, who have all been polio-free for 5 or more years and have completed Phase 1 of laboratory containment (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). Somalia will submit its national documentation and Djibouti will re-submit its final report in 2009. Sudan will need to re-submit its report in view of the recent virus circulation. All the above mentioned countries and others whose basic national documents have been recently accepted will, however, continue to submit annual updates until regional certification has taken place.

The remaining polio endemic countries of the Region, Afghanistan and Pakistan, have submitted provisional national certification documents which were reviewed by the Regional Certification Commission in 2007 and 2008. The preparation of these reports has helped the NCCs and the national programme mangers in compiling and validating a large amount of data on national polio eradication activities and in becoming familiar with the Regional Certification Commission's critical review of such reports.

5. Technical and financial support to countries

Technical support to the regional polio eradication programme is continuing, using about 70 international and over 1000 national polio staff in addition to teams of experts constituting both regional and country Technical Advisory Groups, which are advising the national programmes on strategic directions. At the same time, all polio staff are extending support to the Expanded Programme on Immunization (EPI) as well as helping to address other priority health programmes at country level.

The surveillance structure developed for AFP surveillance has proved to be capable of supporting other EPI activities such as measles elimination and the established laboratory network for polio eradication is now extending laboratory services for EPI diseases and other diseases of public health importance.

Significant resources for the eradication efforts are being provided by the Member States, particularly with respect to routine immunization. In addition, considerable external financial resources were secured to support activities necessary to achieve the target, particularly with respect to the provision of vaccines, operational expenses and technical support needed to intensify supplementary immunization and continue surveillance activities. The external resources received to support the planned activities through WHO for 2008–2009 have exceeded the amount planned (US$ 124 million) to cover operational expenses, surveillance and personnel. The additional resources were needed for operational costs to address developments in the epidemiological situation.

The main contributors to these funds were the UK Department for International Development, Rotary International, The World Bank, GAVI Alliance, Government of the United States of America, Bill & Melinda Gates Foundation, United Nations Foundation, Government of Canada, the European Community, and Governments of Kuwait, Russia, France, Germany, Saudi Arabia and United Arab Emirates.

6. Coordination with other Regions

Coordination with neighbouring countries of other WHO regions is continuing. Coordination meetings for the Horn of Africa countries took place in 2008 and 2009, and the Horn of Africa bulletin is being issued regularly with input from all countries. As well, the Horn of Africa Technical Advisory Group held its third and fourth meetings in July 2008 and February 2009, respectively. Synchronization of activities and exchange of information between countries has improved greatly. However, there is still room for improving direct coordination at local levels. Operation MECACAR to fight polio is continuing between neighbouring countries of the Eastern Mediterranean and European regions, in line with the declaration signed in 2007. The scope of MECACAR is now extending to include measles elimination and routine immunization as well.

Given the continued threat of poliovirus importation from Nigeria, the Regional Office continued to assist in providing technical support to the polio eradication efforts in Nigeria to help in the planning and implementation of polio eradication activities in northern Nigeria.

7. Regional commitment for polio eradication

In spite of the delays in stopping transmission in the Region, regional commitment for poliomyelitis eradication continues to be at its highest level, with national authorities in both endemic and polio-free countries showing great commitment.

The continued interest and regular review of the situation by the Regional Committee, along with the progressive guidance reflected in Regional Committee resolutions, are the driving force towards achieving this goal at regional level. The Regional Office has continued its advocacy efforts with dissemination of information and regular updates and alerting national authorities to developments. The Regional Director continued to pay visits to priority countries and met with Heads of State, Prime Ministers, Ministers of Health and other senior national officials, who assured him of their continuing commitment to eradication efforts.

The commitment of the two endemic countries of the Region, Pakistan and Afghanistan, were reaffirmed during the Advisory Committee on Polio Eradication meeting in Geneva in October 2008, as well as during the visit of the WHO Director-General and Regional Director to both countries and in subsequent meetings held with high-level officials including President Hamid Karzai of Afghanistan and Prime Minister Yusuf Raza Gillani of Pakistan.

8. Challenges

The main challenges facing the programme include the following.

- Continuation of endemic wild polio virus transmission in the shared transmission zones of Pakistan and Afghanistan, where access to children is compromised in some areas due to insecurity especially in the conflict-affected areas of southern Afghanistan, and in other areas by cultural constraints, refusals and sub-optimal supplementary immunization activities quality.
- Ongoing outbreak and spread of poliovirus in south Sudan, indicating a large immunity gap caused by poor routine immunization and sub-optimal quality of supplementary immunization activities.
- Importation of wild poliovirus to the Region from remaining endemic countries, especially for countries in the extended Horn of Africa.
- Maintaining the interest and commitment of national authorities at all levels in both polio-endemic and polio-free countries.
- Securing necessary resources both from national and external resources.

9. Future directions

To address these challenges the regional priorities for polio eradication during 2009 are as follows.

1. Interrupt transmission in Pakistan and Afghanistan through intensification of supplementary immunization activities, addressing managerial issues, ensuring high quality performance, and ensuring access to children in security-compromised areas.
2. Interrupt transmission of P1 virus in south Sudan with focus on improving the quality of supplementary immunization activities and providing necessary logistical support to the programme.

3. Avoid large immunity gaps in polio-free countries through improvement of routine immunization and implementation of supplementary immunization activities, especially in foci of low population immunity.
4. Maintain certification-standard surveillance in all countries, both at national and sub-national levels and particularly among high risk areas/populations.
5. Maintain and further strengthen coordination activities between neighbouring countries, especially between Afghanistan and Pakistan and in the Horn of Africa, including synchronization, exchange of information and local level planning and coordination.
6. Maintain the polio laboratory network and promote its use for other relevant programmes and continue with containment and certification activities.
7. Make available the financial resources required to implement the regional plan for polio eradication.