

Report on the

**Sixth meeting of the Regional Technical
Advisory Group on Poliomyelitis Eradication**

Cairo, Egypt
12–13 April 2008



**World Health
Organization**

Regional Office for the Eastern Mediterranean

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1. INTRODUCTION

The Regional Technical Advisory Group (RTAG) on Poliomyelitis Eradication held its sixth meeting on 12 and 13 April 2008 in Cairo. The meeting was attended by members of the TAG, Director EPI programme in Pakistan, Representatives of UNICEF (HQ, MENA, ROSA and ESARO), Rotary International, CDC, USAID and WHO staff from HQ, SEARO, EMRO & AFRO. The programme of the meeting and the list of participants are attached (Annexes 1 and 2).

Dr Ali Jaffer Mohamed, Chairman of RTAG, opened the meeting and noted that the meeting was being held at a very critical period in the history of the programme. Dr M. H. Wahdan, Special Adviser to the Regional Director on Poliomyelitis Eradication, delivered a message from Dr Hussein A. Gezairy, WHO Regional Director for the Eastern Mediterranean. In his message, Dr Gezairy, noted the progress achieved towards polio eradication from the Region and noted that circulation was now restricted to limited areas in Afghanistan and Pakistan. He referred to the recent meeting of the TAG for Afghanistan and Pakistan and acknowledged the immediate implementation of the recommendations of the TAG. With regard to the need for preparedness to address importation by all countries, particularly those at high risk of importation, he acknowledged rapid identification and good response to importations in the Region to date. He closed by noting the importance being given to ensuring that surveillance was maintained by all countries at the certification standard.

2. IMPLEMENTATION OF THE RECOMMENDATIONS OF THE 5TH REGIONAL TAG MEETING

Dr M. H. Wahdan, WHO/EMRO

In its last meeting, the RTAG made 20 recommendations covering the 7 priority areas starting with the general priorities, recommendations concerning mopping up, high-risk areas and populations, countries at high risk of importation, problems faced by poor security, vaccines and funding.

The RTAG noted with satisfaction that the regional programme closely followed the priorities set during the last meeting, and almost all the recommendations made under the various priority areas had been implemented. The efforts made and various approaches and initiatives taken by the programme to address the problems posed by poor security were acknowledged, particularly as many countries of the Region are facing significant security problems.

The RTAG reiterated that their previous recommendations are still valid and efforts made by the programme to ensure their full implementation should continue. In addition, the RTAG emphasized the importance of ensuring quality, particularly in relation to the implementation of the recommendations related to supplementary immunization activities and surveillance, especially in areas not affected by poor security. It emphasized that low quality performance in these areas appears to be the main reason for continued viral circulation, such as in the province of Sindh in Pakistan.

3. PROGRESS TOWARDS POLIO ERADICATION

3.1 Global situation

Dr Bruce Aylward, WHO/HQ

The RTAG meeting corresponds with the completion of the first year of the intensified global polio eradication effort, launched by stakeholders in February 2007 at an urgent consultation convened by the Director-General of WHO. Characterized by an enhanced commitment and engagement of political leaders in endemic countries, this effort has seen a marked scale-up in the application of new tools and tactics in all of the polio-infected areas, with the goal of interrupting type 1 poliovirus globally by the end of 2008, followed soon after by type 3.

New studies in each of the 3 largest polio-endemic countries (India, Pakistan, Nigeria) have confirmed that the field efficacy of the monovalent type 1 poliovirus vaccine (mOPV1) is 2 to 4 times greater against that serotype than trivalent OPV (tOPV), depending on the setting. Data from India suggest that mOPV3 may be even more efficacious against the relevant serotype than mOPV1 on a per dose basis.

Data from the Polio LabNet demonstrated that the new testing algorithm employed in 2007 has resulted in a striking reduction in the average time to confirm polio infection in endemic Regions, from over 42 days in early 2006 to less than 21 at present.

The direct engagement of heads of state and government, through travel and correspondence by the WHO Director-General and Regional Directors, resulted in a substantial increase in both the number and quality of polio campaigns in all polio-infected areas.

This intensification of the polio eradication effort has been associated with a greater than 60% decline in polio cases in 2007, compared with 2006, and an 82% reduction in polio cases due to type 1 virus. The most compelling evidence of the impact of the intensified effort is the absence of type 1 polio for >12 months in western Uttar Pradesh, India, and the interruption of the original imported poliovirus in 24 of the 27 countries that had been re-infected between 2003 and 2007 by viruses originating in either northern Nigeria (20 countries) or northern India (7 countries).

The immediate priorities for building on this progress are: a) rapidly enhancing the nature and scale of mop-up operations in India; b) urgently addressing the early 2008 upsurge in type 1 cases in key states of northern Nigeria due to the levelling off of polio campaign coverage at <80%; c) enhancing polio campaign quality monitoring, especially in Pakistan, to reflect performance more realistically and guide activities; and d) implementing innovative strategies in security affected, polio-infected areas, especially Chad and Afghanistan. The rapid addressing of these challenges is essential to building the donor confidence needed to close the US\$ 525 million funding gap for 2008–2009 intensified eradication activities.

While the recent upsurge in type 1 polio cases in northern Nigeria and the uncontrolled transmission of the imported polioviruses in Chad continue to pose a real threat to eradication efforts in the Eastern Mediterranean Region, the Region remains poised to be the next area to interrupt both type 1 and type 3 wild poliovirus transmission due to the low level of the remaining indigenous virus

transmission, the high level of regional commitment to the goal, and the innovative strategies being employed.

3.2 Update on endemic countries

3.2.1 Recommendations of the TAG on polio eradication in Afghanistan and Pakistan

Dr Nicholas Ward, Chairman TAG Afghanistan and Pakistan

In a meeting of the Afghanistan and Pakistan TAG held on 3–4 February 2008, the TAG expressed concern about the continued circulation of the virus in the transmission zones in Pakistan despite the large number of supplementary immunization activities, which suggests the probable presence of significant numbers of inadequately immunized population groups. The fact that the majority of circulation areas have no accessibility problem points to weak performance in these areas. The Afghanistan/Pakistan TAG therefore made several recommendations to address the quality gaps in supplementary immunization activities in Pakistan and Afghanistan. As well, recommendations were made to strengthen and validate surveillance. Communication was also discussed and recommendations made to establish communication indicators and to continue communication reviews and use data obtained in support of supplementary immunization activities. Last but not least, there were also recommendations on the urgent need to strengthen routine immunization.

3.2.2 Progress, remaining challenges and status of implementation of TAG recommendations in Afghanistan

Mr Jalaa Abdelwahab, WHO/EMRO

There has been an overall decrease in the number of cases and infected districts in the past two years. Poliovirus circulation remains localized in the security-compromised southern region.

During 2007, a total of 11 supplementary immunization activities (4 NIDs, 7 SNIDs) were conducted. In three of the NIDs the OPV used was trivalent and in the fourth (October 2007) a combination of trivalent and monovalent vaccines was used. SNIDs targeted the southern and eastern regions and mostly used the appropriate monovalent vaccine.

In 2008, the programme started implementing a short-interval additional dose by giving another dose of the same mOPV soon after the supplementary immunization activities dose in selected high-risk districts in the southern region and Farah province.

Different data sources confirm that the quality of immunization campaigns in most of southern region and Farah province is below the desired level, especially for the infants under one year of age. Post campaign assessment (PCA) data and market surveys about finger-marking show that considerably higher quality of campaigns is maintained in the rest of the country.

The three major challenges for the programme in Afghanistan are: a) ensuring access to children and safety for vaccinators in key insecure areas; b) addressing high population movement between endemic areas in Afghanistan and Pakistan; and c) maintaining high immunity in polio-free areas of Afghanistan until all polio transmission is stopped.

The strong political commitment continues to facilitate programme activities. The programme works closely at provincial and district level to ensure active community involvement. Additionally, there is close coordination with ICRC and ISAF/NATO to maximize accessibility and ensure security during activities. This, combined with the support letter from the anti-government elements late last year, helped reduce the percentage of inaccessible children in the south from 8% in December campaigns to only 3% in January 2008, with the programme reaching children in Musa Qala after almost 2 years of inaccessibility. Every window of opportunity is used to vaccinate children in conflict areas.

Overall, AFP surveillance is sensitive in most parts of Afghanistan, including security affected districts in the south where special approaches are implemented. However, there is some concern regarding possible under-reporting of cases, among females especially in Kandahar.

Interruption of WPV circulation in the southern region largely depends upon the security situation but also need to focus programme efforts on ensuring high quality in accessible areas.

3.2.3 Progress, remaining challenges and status of implementation of TAG recommendations in Pakistan

Dr Hussein Bux Memon, EPI Manager, Pakistan

In 2008, as of 10 April, Pakistan reported 3 WPV1 cases compared to 7 WPV (2 WPV1 and 5 WPV3) in the same period of 2007. The three cases of 2008 are reported from three newly infected districts in Sindh province: Hyderabad, Nawabshah and Shikarpur. Genetically the causative viruses are linked to earlier circulation in the province. All 3 cases have received less than 3 routine OPV doses but a good number of supplementary immunization doses.

Overall key surveillance indicators are reaching international standard at national and provincial levels. However, field reviews and genetic analysis have shown sub-optimal performance in a few districts. The surveillance system is supported by a highly efficient regional polio reference laboratory.

Analysis of the vaccination status of non-polio AFP cases among the age group of 12–23 months showed that at the country level and in all provinces except Balochistan, about 90% of children have received 7 or more doses reflecting good impact of vaccination activities. Balochistan has persistently suboptimal vaccination status of the children as compared to other provinces.

Weak management and lack of accountability at district level are the main reasons behind suboptimal quality and continuation of wild virus circulation in accessible areas. One of the main challenges in these areas is persistence of suboptimal vaccination activities at subdistrict levels despite overall high coverage estimates.

The second reason behind continued circulation of wild viruses is lack of access to all children due to insecurity, largely in tribal areas of Federally Administered Tribal Areas (FATA) and neighbouring districts of NWFP. Over 3 million children live in these areas where programme performance cannot be easily assessed.

Although refusals are not the biggest challenge at the country level, pockets continue in some key districts throughout the country, despite the ongoing extensive social mobilization activities to address this problem.

The recommendations of the Technical Advisory Group (TAG) meeting in February 2008 have been implemented or are under implementation. Independent monitoring to assess quality of the January round revealed good overall coverage but the coverage of children less than 6 months in a few key districts is much lower than that reported by the post campaign monitoring. As well, the coverage by finger marking is 10%–20% less than the coverage by recall.

The urgent priority needs of the programme in Pakistan are as follows.

- High profile advocacy mission with the new political leadership.
- Overcoming the managerial issues in Sindh province.
- Ensuring full implementation of February TAG recommendations, especially those related to addressing work performance at district level.
- Securing vaccine and operational resources for the planned activities in 2008 and maintaining a stock of monovalent OPV to use quickly in mop up activities.

3.2.4 Direct protection by vaccination in Afghanistan and Pakistan

Dr Nicholas Grassly, Imperial College London

The preliminary results of the analysis of surveillance and campaign data indicate that the case-control estimate of the efficacy of trivalent OPV in Pakistan against paralytic type 1 polio is 21% (15%–26%) per dose and against type 3 polio is 14% (7%–20%) per dose. These estimates are comparable to the estimated efficacy of this vaccine in Nigeria and India (excluding Uttar Pradesh and Bihar), suggesting good quality supplementary immunization activities can have a significant impact on wild poliovirus transmission. Reliable estimates of the efficacy of the monovalent vaccines could not be obtained due to the low number of polio cases in areas with monovalent OPV use.

Estimates of vaccine-induced immunity, based on the estimated efficacy of the vaccines and reported dose numbers by non-polio AFP cases, indicate significant improvements over the past few years across Pakistan. Improvements in vaccine-induced immunity in high risk areas have been matched by a decline in the number of reported polio cases. Further improvements are possible through the strategic use of monovalent and trivalent vaccine and increased quality of supplementary immunization activities. The impact of different vaccines on population immunity can be estimated using back-of-the-envelope calculations or more sophisticated cohort models. These approaches can be used to quickly identify optimal strategies to achieve strategic aims of eradicating type 1 and 3 wild poliovirus, while preventing the emergence of a cohort of children susceptible to a particular poliovirus serotype.

3.3 Situation in high risk countries

3.3.1 Sudan

Dr Salah Haitham, WHO/Sudan

Sudan experienced wild poliovirus importation in September 2007, which fortunately affected only one child in South Darfur. This importation was the second test for the national plan of preparedness and response to wild poliovirus importation. The poliovirus was detected early (within 5 days of onset) and the response was early (within 15 days from receiving the confirmation result). According to the genomic sequencing, the source of importation was Chad. The size of the supplementary immunization response was adequate (three rounds of mOPV targeted 6.1 million children in northern Sudan and 2.8 million children in southern Sudan). On 10 April 2008, the programme received a notification from the reference laboratory about a wild P1 virus isolated from a child discovered in Akobow district in Jongli state. The genomic sequencing is still in process.

The national preparedness plan is well updated annually and proved to be effective in early detection of the wild poliovirus and in early response. It outlined all the high risk areas and populations, and indicated the appropriate actions to be taken in case of detection of any wild poliovirus.

The AFP surveillance performance indicators in both parts of the country have been at certification standard level for several years. The AFP rate and adequate stool sample collection rate have exceeded the targets of 2 cases per 100 000 population under 15 years and 80%, respectively, since 2003. However, the plan identified a few gaps in some states of Sudan, and focused actions are being taken in these states in order to close these gaps.

While the routine vaccination programme is progressing well in the northern states (OPV3/DPT3 coverage rate reached 91% in 2007), the southern programme is suffering from lack of infrastructure and trained workforce. However, the supplementary immunization campaigns with OPV helped the southern states to protect the children against polio. As indicated by the number of OPV doses received by the non-polio AFP cases, the immunity level among children showed very good progress during the past four years. In 2007, Sudan registered the lowest percentage of children who never received OPV since 2000.

The remaining challenges facing the polio eradication programme in Sudan include the following.

- Ongoing circulation of polioviruses in Nigeria, Niger, Chad and Democratic Republic Congo.
- Population movement of IDPs/refugees, returnees, nomads and pilgrims.
- Limited access to all children in Darfur.
- Maintaining external resources.

In the light of the appearance of a new polio case in Jongli, southern Sudan, the programme is planning to conduct at least 2 supplementary immunization rounds using mOPV1 before the rainy season, covering all 10 southern states. The northern programme is planning to add OPV to the Accelerated Child Survival Initiative package in the targeted states. It is proposed also to conduct 2

NID rounds at the end of 2008. All possible efforts should be exerted to strengthen the routine vaccination programme in the southern states and Darfur states in order to close the immunization gaps among small children.

3.3.2 Somalia

Dr Abraham Mulugeta, WHO/Somalia

Somalia was free from endemic WPV transmission from October 2002 to July 2005, when an importation of WPV1 from Yemen resulted in a large outbreak claiming 228 cases, with the last case reported on 25 March 2007. Success in bringing an end to this outbreak was due to the very good coordination and collaboration among polio eradication partners and continued commitment and support from the donors which enabled all planned supplementary immunization activities to be implemented and the AFP surveillance to continue.

From July 2005 to the present, Somalia has successfully implemented 25 house-to-house campaigns, most of them NIDs and using mOPV1, except the last two campaigns in early 2008 that used tOPV. The quality of supplementary immunization activities improved progressively as the strategy of implementation shifted to a staggered (phased) approach that helped in mobilizing large numbers of experienced national staff and polio eradication partners to support the high-risk areas during campaigns. Distribution of vitamin A and de-worming tablets during NIDs improved community acceptance of OPV.

The key AFP surveillance indicators have been maintained above the certification standard for the past 3 years. There is very good awareness and support of the community and health care providers to AFP case notification. The nearly 200 national working within Somalia under WHO contracts conduct regular visits to more than 430 surveillance sites and collect and report information on AFP and measles cases and continue to support other public health activities and emergencies.

Polio staff have been and will continue extending support to routine immunization activities in Somalia. The success of polio eradication in Somalia to date, despite the lack of effective central government for 17 years together with the continued conflict, is due to several factors:

- acceptance and involvement of community, clan and religious leaders
- support and commitment of local authorities
- hard work of more than 10 000 volunteer vaccinators and supervisors
- hard work and commitment of national polio staff appointed by WHO and other partners
- good collaboration between all polio eradication partners and support of donors
- continued support of EMRO in facilitating recruitment of nationals on special contracts that has enabled their presence in every district all the time and thus ensuring successful supplementary immunization activities and effective surveillance.

Considering the high risk of re-infection from endemic countries and weak routine EPI coverage, there is a need to continue supplementary immunization activities in 2008 and 2009. Surveillance activities would benefit from conducting a surveillance review.

4. REGIONAL STRATEGIES AND PLANS

4.1 General surveillance progress and issues

Dr Faten Kamel and Dr Humayun Asghar, WHO/EMRO

AFP surveillance is well established in all countries of the Region with high sensitivity and quality. The overall non-polio AFP rate in the Region for 2007 was 4.1 cases per 100 000 population under 15 years of age. Almost all countries achieved a rate of greater than 1 per 100 000 population under 15 years except Palestine. Additionally, polio-infected countries and those at high risk of importation other than Djibouti have achieved a rate of more than 2 per 100 000 at the national level. At the subnational level, most areas in polio infected countries have rates higher than 2 per 100 000 population under 15 years. However, some gaps exist in high risk countries and areas, such as in some provinces in western and southern Sudan and western Saudi Arabia.

With regard to stool adequacy, at regional level the rate exceeded 90% in 2007 and 2008. Only Lebanon and Bahrain did not achieve the target of 80% in 2007. At subnational level some gaps were noted in populous governorates of Sudan and in Somalia. The number of days between collection and arrival of specimens at the laboratory reached an average of 4 days in 2007. This average was more than the target of 3 days in Iraq and Saudi Arabia, which have in-country laboratories, as compared to Libyan Arab Jamahiriya, which has no in-country laboratory and where the samples take an average of 3 days to reach the laboratory in Tunisia.

The quality of the AFP cases is regularly monitored by reviewing final diagnosis of AFP cases and calculating the GBS (Guillain-Barré Syndrome) rate. Most countries have achieved and maintained a minimum rate of 0.6 GBS cases per 100 000 population under 15 years of age in the past three years.

The sensitivity of AFP surveillance in the Region has been further enhanced with the expanded implementation of the regional guidelines for contact sampling, which started in the priority countries of Pakistan, Afghanistan, Egypt, Somalia and Yemen. A new data management program was introduced at country and regional level for monitoring and ensuring the quality of the contact sampling system. The value of contact sampling is clearly illustrated by the identification of newly infected districts in polio-infected countries based on isolation of wild poliovirus among contacts of AFP index cases with negative laboratory results. During the period 2005–2008, 16 AFP cases were confirmed as polio based on the isolation of the wild virus from contacts only. This confirmation has identified over the same period 13 different districts as infected that would have been missed if the contact sampling system was not implemented.

With most of the countries in the Region being polio-free, the second emerging issue in AFP surveillance is the increased classification of AFP cases as vaccine-associated paralytic polio (VAPP) cases. There is evidence of over-diagnosis of VAPP cases in some countries as some of these cases do not even fulfil the basic definition criteria for VAPP. Efforts are continuing to brief national expert groups in this regard.

Emerging issues in AFP surveillance were also presented. An overview of the vaccine-derived poliovirus (VDPV) cases in the Region (12) in the past three years showed regular isolation of such

viruses. Most of the cases were among children under 2 years of age with multiple OPV doses. These cases were classified as immunodeficient VDPV (iVDPV) and did not result in any local circulation, reflecting good population immunity. Most of these VDPV were of type 2; only three were type 3. Regional guidelines to respond to VDPV were presented and endorsed by the RTAG. Delayed receipt of sequencing results for timely identification and response to VDPV cases was also noted.

National surveillance reviews are also being conducted regularly, particularly in polio-free countries of the Region to assess the quality of the system and look beyond the indicators. AFP surveillance reviews include an assessment and review of the national preparedness for and response to wild poliovirus importation. The main findings of the reviews confirm overall sensitivity and reliability of the system. The reviews helped identify common issues in polio-free countries that need fine tuning, which are being addressed through regional workshops.

The performance of WHO Eastern Mediterranean Region poliovirus laboratory network is being sustained at certification standard. All network laboratories were fully accredited and have passed the WHO proficiency testing panel for unknown viruses for both primary virus culture and intratypic differentiation testing. The annual workload is high due to sustaining the AFP rate at 2 or more cases per 100 000 population under 15 and collection of stool samples from contacts. A remarkable achievement is implementation of the new testing algorithm in all network laboratories, which has shortened the timeliness of reporting to less than two weeks for all virological results. The speed of sequencing results for wild polioviruses has also increased. In most cases it has been completed within one week of isolation, which in turn has permitted rapid response by immunization activities.

The sequencing data have shown a decrease in genetic diversity and localization of virus transmission in Pakistan and Afghanistan. The number of clusters and chain of transmission are on the decline.

4.2 Regional containment activities

Dr Humayun Asghar, WHO/EMRO

Eighteen countries (Bahrain, Djibouti, Egypt, Islamic Republic of Iran, Iraq, Jordan, Kuwait, Lebanon, Libyan Arab Jamahiriya, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Syrian Arab Republic, Sudan, Tunisia and United Arab Emirates) have reported completion of Phase 1 containment activities (laboratory survey and inventory). National plans of action have been developed by Afghanistan and Pakistan and are still in the process of approval by the respective governments. In Yemen, the plan of action is not being implemented. As of December 2007, 19 775 laboratories have been surveyed and only 9 laboratories have been identified as storing WPV potentially infectious material.

Reports on documenting the quality assurance of Phase 1 containment activities have been submitted by 16 of the 18 countries who have completed Phase 1. These reports were reviewed by independent reviewers. Reviewed reports were submitted to the Regional Commission for Certification of Polio Eradication through respective National Certification Committees. Three countries (Egypt, Kuwait and Palestine) are due to submit their quality assurance reports.

4.3 Regional certification activities

Dr Javid Hashmi, WHO/EMRO

The Regional Certification Commission (RCC), established in 1995, has held 17 meetings. The eighteenth meeting will be held on 14–17 April 2008. The RCC continued to review various national documents submitted by the National Certification Committees (NCC) of 19 countries in the Region. These included the final national documents for regional certification submitted by 12 countries (Bahrain, Islamic Republic of Iran, Lebanon, Jordan, Libyan Arab Jamahiriya, Morocco, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, Tunisia and United Arab Emirates). All these countries have been polio-free for five or more years and have completed Phase 1 of laboratory containment. Similar reports from two other countries (Iraq and Kuwait) meeting these criteria will be reviewed by the RCC in April 2008. All the above mentioned countries and others whose basic national documents have been recently accepted (Egypt, Palestine and Sudan) will continue to submit annual updates until regional certification has taken place.

Yemen has revised and re-submitted their national document, which will be considered by RCC 18 in addition to a provisional national documentation report submitted by WHO/UNICEF in Somalia. The remaining polio endemic countries of the Region, Afghanistan and Pakistan, have also submitted provisional national certification documents that were reviewed by the RCC in 2007. The preparation of these provisional reports has helped the NCCs and the national programme managers in the endemic countries in compiling and validating a large amount of data on national polio eradication activities and in becoming familiar with the RCC's critical review of such reports.

In anticipation of regional certification, a first draft of the outline of the regional report was prepared and reviewed by RCC 17. Amendments will be made at periodic intervals and as per epidemiological developments. The RCC's own assessment of the sustainability of polio-free status and of potential risk of spread of wild poliovirus following an importation will be prepared closer to certification.

In addition to reviewing country reports, the RCC continues to support and provide encouragement to the NCCs and the national programmes to ensure that the current tempo of the polio eradication initiative does not falter. The RCC also regularly reviews the progress in completion and full documentation of Phase 1 of laboratory containment of wild poliovirus and of potentially infectious material as well as critically appraises the regularly updated national plans for response to an importation.

4.4 Regional priorities and plans

Dr Faten Kamel, WHO/EMRO

The main challenges facing the polio eradication initiative in the Region include the following.

- Continuation of endemic wild poliovirus transmission in the shared transmission zones of Pakistan and Afghanistan, where access to children is compromised in some areas due to insecurity and traditional practices, and refusals in other areas.
- Difficulty in maintaining the interest and commitment of national authorities at all levels in both polio-endemic and polio-free countries.

- High risk of importation of wild poliovirus to the Region from infected countries, especially for countries in the extended Horn of Africa.
- Securing necessary resources both from national and from external sources.

To face these challenges, the top regional priority is to interrupt virus transmission in Pakistan and Afghanistan block as soon as possible through intensification of supplementary immunization activities, ensuring high quality performance, making appropriate use of available monovalent vaccines, addressing managerial issues and ensuring access to children in the security-compromised areas. Additionally, prompt response to the recent Ethiopian case detected in Sudan by two NIDs in southern Sudan using mOPV1 is another top priority.

The other important regional priority is to sustain polio-free status of other countries by avoiding 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. There is also a need to maintain certification-standard surveillance in all countries, both at national and subnational levels and particularly among high risk areas and populations, as well as to be adequately prepared to detect and respond to importation.

Maintaining certification standard AFP surveillance continues to be a priority. Environmental surveillance will continue in Egypt and will be explored for Karachi, Pakistan

Other priorities include maintaining and further strengthening 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. It is also important to secure the financial resources required to implement the regional plan for eradication, and optimize collaboration between the polio eradication initiative and Expanded Programme on Immunization.

5. POLIO IMMUNIZATION (IPV/OPV USE)

5.1 WHO position research agenda

Dr Roland Sutter, WHO/HQ

Preparations for the post-eradication era for poliomyelitis eradication started almost 10 years ago. A critical decision, to stop the routine use of oral poliovaccine (OPV), was proposed in 2003, and endorsed in 2004 by the Advisory Committee for Polio Eradication (ACPE).

Since then, substantial progress has been made to identify the prerequisites for OPV cessation, elaborate the vaccination options (basically only inactivated poliovirus vaccine [IPV]), and better define the risks for paralytic disease following OPV cessation.

In 2007, the ACPE added to the list of prerequisites, the need for an “affordable IPV” appropriate for use in developing countries. Furthermore, in early 2008, it became apparent that the option for production of Sabin-IPV (IPV produced from Sabin strains) in developing countries is needed to facilitate OPV cessation.

In order to reform the policies and make certain that the appropriate products are available to: a) accelerate eradication; and b) secure the achievements of polio eradication, the work in research and product development of the polio eradication initiative has expanded significantly.

The most important part of this work has been the rapid development and licensure of monovalent type 1 oral poliovaccine (mOPV1) in 2005. Subsequently mOPV3, and most recently, mOPV2, have been developed and licensed. Thus far, more than 2.5 billion doses of mOPV1 have been used in the polio-endemic and recently-infected countries. In addition, clinical studies on mOPVs have been carried out or are in progress in Egypt, India and South Africa. To evaluate programme performance, seroprevalence surveys for antibodies to polioviruses have been carried out in Egypt and India. Collaboration with the Imperial College has resulted in efficacy estimates for the different OPVs (tOPV, mOPV1, mOPV3, and mucosal immunity).

In terms of research and product development for the post-polio eradication era, the most important product development is that of Sabin-IPV. A modelling collaboration between Harvard/MIT, CDC and WHO has already provided additional insights and resulted in multiple publications. A Sabin-IPV development collaboration has been established, and the pharmaceutical development has nearly been completed. Additional work is ongoing to making IPV affordable through: 1) schedule reduction and antigen dose reduction (i.e. fractional dose studies); 2) investigation of adjuvant use; 3) optimization of production processes (i.e. increase cell densities, new cell lines, use of alternative inactivation agents); and 4) production in lower-cost settings (i.e. developing countries). The initiative is investigating the feasibility of developing alternate seed strains for IPV production (seeds that would only replicate in tissue culture). The ultimate goal of these development efforts would be to permit production of IPV without the need of biosafety containment requirements. However, such products will require an intensive programme of work over the next 6–10 years.

In conclusion, an extensive programme of work for research and product development has been established and is already making important contributions to accelerate eradication and prepare for a polio-free world.

5.2 Situation in the Eastern Mediterranean Region

Mr Jalaa' Abdelwahab, WHO/EMRO

A basic algorithm was applied to identify potential VAPP cases in the Region in 2007 (excluding Afghanistan, Pakistan and Somalia). Only 7 of the 10 reported VAPP cases in 2007 fulfilled the basic criteria for potential VAPP (no wild virus isolated, adequate stool, Sabin-virus isolated and residual paralysis). A review of the VAPP cases reported by countries in their AFP case file and their annual national certification document shows that countries such as Iraq, Jordan, Saudi Arabia and the Syrian Arab Republic have reported VAPP cases since 2000. Of concern is over-reporting of VAPP cases, some of which have adequate stool and no residual paralysis, such as in Egypt and Yemen.

VDPV cases have been reported in the past three years primarily from the Islamic Republic of Iran and Syrian Arab Republic but adequate follow-up and response showed that they were all iVDPV and did not lead to secondary cases or ongoing excretion.

Concerning introduction of IPV in routine polio vaccination schedule in the Region, only four countries have done so to date: Palestine (more than 20 years), Jordan (first IPV in 2005, second IPV/OPV 2006), Syrian Arab Republic (first and second IPV in 2008) and Saudi Arabia (first IPV in 2008). Five other member countries of the Gulf Cooperation Council are planning to introduce IPV as a combination with OPV.

One of the main conditions for countries introducing IPV is to have high routine coverage (DPT3 >90%). It is, therefore, critically important to review coverage data with 3 or more OPV doses at national and subnational levels using various sources of coverage, including joint reporting, national certification documents and the immunization profile of non-polio AFP cases (6 months – 3 years) to avoid masking low coverage data at subnational levels by using only national coverage figures.

Reviewing the experience of the three countries which have introduced IPV recently (Jordan, Saudi Arabia, Syrian Arab Republic) showed that IPV introduction coincided with additional changes in EPI schedule especially the introduction of tetravalent and pentavalent vaccines for other antigens. This timing facilitated addressing cold chain capacity needs, and avoided increase in injections related to introduction of IPV. The experience shows that solid plans to conduct structured and regular training of vaccination staff focused on addressing these changes at all levels and updating of all forms, including vaccination cards, has been critical. Additionally, there is a considerable price increase (more than 30 times higher) when comparing per dose price of OPV versus IPV (both single dose and multiple-dose vials). Countries need to consider wastage, procurement of syringes and short shelf life when making the decision between single dose and multiple dose IPV vials.

Overall, countries considering introducing IPV must follow the WHO position paper, especially with regard to assessment of risk, requiring correct diagnosis of VAPP cases, ensuring high OPV3 coverage both at national and subnational levels, as well as conducting financial studies and ensuring sustainability. Countries, especially those which have introduced IPV, must focus efforts on ensuring high OPV coverage (90% OPV3) at subnational levels and monitoring sources other than reported coverage.

6. CONCLUSIONS

Regional polio situation

- In the six months leading up to the sixth meeting of the Regional TAG (April 11–12 2008) continuing wild poliovirus transmission in the Eastern Mediterranean Region of WHO was known to be persisting only in the two epidemic zones: Helmand, Kandahar and Farah Provinces in Afghanistan; and Sindh, Baluchistan and the North West Frontier Provinces in Pakistan.
- The recent isolation of a type 1 wild poliovirus from a child in Jonglei Province is still under investigation and indicates either a new importation into Sudan or possible undetected transmission from previous known cases in the southern part of the country.

- The highest priority for polio eradication in the Eastern Mediterranean Region, by far, is to stop poliovirus transmission in all areas where it is known to be occurring.
- Karachi remains a major threat to polio eradication in Pakistan and Afghanistan. There is evidence that the city is the source of a number of outbreaks in Sindh Province. With its large, mobile, cosmopolitan population, the city has the potential to spread polio more widely in Pakistan and to Afghanistan. The TAG was informed that measures were being taken to improve surveillance and supplementary immunization activities in the city, including drafting in experienced staff and improving supervision, campaign monitoring and AFP surveillance.

Afghanistan and Pakistan

Although in some areas, notably in the southern region of Afghanistan and the North West Frontier Province of Pakistan, limited access to families is a factor in persisting WPV transmission, most cases, especially in Sindh Province are currently occurring in districts where security is not a constraint. In these districts, the reasons for persistent transmission lie in insufficient commitment to polio eradication and poor management at many levels from EDOs down to responsible Medical Officers. This results in poor quality planning and ineffective supervision at all levels.

The major constraint preventing polio eradication in Afghanistan is the difficulty of reliably gaining access to eligible children during supplementary immunization activities. The TAG noted the progress made in reaching agreements on the importance of polio eradication with both government forces and with anti-government elements. The TAG further noted that the number of children living in security-affected districts of Afghanistan is not large, leading to the hope that even with limited and sporadic success, it may be possible to achieve polio eradication in these areas.

Early experience in the conduct of short interval additional doses (SIAD), in which a second dose of monovalent OPV is administered within two weeks of supplementary immunization activities to all eligible children living in areas of difficult and limited access, have been encouraging. This appears to be a well-founded strategy that should facilitate achieving high immunity levels in areas with difficult access.

Clear evidence has emerged that monitoring of immunization coverage following supplementary immunization activities has been much over-estimated. More credible and more readily verifiable coverage is being achieved by monitoring through finger-marking.

Sudan

The situation in Sudan will not become clear until full results of ITD and epidemiological investigation of the positive case in Jonglei become available. Whatever the source of the Jonglei virus, Sudan is at risk of importations from the deteriorating polio situation in Nigeria and the uncontrolled polio epidemic in Chad. It will be critical for Sudan to maintain high levels of immunization coverage in all areas and to intensify AFP surveillance throughout the country.

Somalia

The teams conducting polio eradication in Somalia have achieved remarkable success in a country without any infrastructure. Even in the absence of any routine system, immunization coverage levels have been maintained along with an apparently effective system of AFP surveillance including the collection of specimens and their transport to the laboratory, albeit with some delay.

The present schedule of immunization, depending on two full NIDs, may be insufficient to guarantee immunity against all three poliovirus serotypes. Since trivalent OPV will trigger the most reliable immunity against type 2 polio, it is possible that the present schedule may be leaving children aged under 24 months with inadequate protection against types 1 and 3.

Yemen and Djibouti

While most countries of the Region have maintained high immunization coverage, mostly based on effective routine immunization, Yemen in particular and Djibouti have witnessed a decline in immunization coverage, especially in the youngest age group. This decline could be serious and could allow poliovirus transmission to become established should importations occur.

All countries

In view of the upsurge in cases in Nigeria and the uncontrolled polio epidemic in Chad, all countries of the Eastern Mediterranean Region must be fully prepared to tackle any wild poliovirus importations, should they occur.

7. RECOMMENDATIONS*Management issues in Pakistan*

1. As a matter of urgency, federal and provincial authorities in Pakistan, most notably in Sindh Province, including both civil administration and the health department, should review management performance as it affects polio eradication activities at the district level. This continuing review should identify under-performing districts, analyse the factors responsible including staff performance and ensure that it is understood that performance failures will not be tolerated.
2. While initial efforts to strengthen management will depend on motivation, developing commitment and providing appropriate management and technical support, continuous failure should be regarded as a basis for further corrective measures

Karachi City

3. Ensuring the quality of polio eradication activities in Karachi remains an extremely high priority for the programme in Pakistan, including ensuring effective surveillance and high quality supplementary immunization activities in all parts of the city. The initial measures

already taken towards achieving this must be followed through and carefully monitored to identify problems and to measure achievement.

Environmental surveillance

4. The TAG believes it is now appropriate to establish environmental surveillance in Pakistan through testing of wastewater for the presence of polioviruses and their ITD to monitor WPV circulation. Accordingly, the necessary preparations, including resource provision, training on specimen collection techniques and assessment of laboratory capacity, should proceed as soon as possible.
5. While environmental testing may be appropriate for many cities in Pakistan, the TAG recommends that it should initially be established in Karachi. The environmental surveillance should attempt to provide data from all parts of the city, providing additional information to help direct efforts towards establishing and maintaining polio-free status throughout the city.

Monitoring of immunization coverage

6. In the future, staff conducting supplementary immunization activities should finger mark all recipient children. The supply of markers has been increased to the level where training on effectively and reliably marking fingers should now be a mandatory part of pre-campaign briefing. Planning for supplementary immunization activities should now include monitoring based on finger marking as an integral part of all campaigns.
7. Monitoring through finger marking should be conducted in association with independent monitoring conducted by teams, ideally based on female workers such as teachers and nurses from other government departments.
8. Analysis of monitoring results should be based on assessment of coverage to the lowest practical level, certainly to the subdistrict level, to allow identification of under-reached areas. Analysis should also include age monitoring to ensure immunization of all target children, whatever their age.
9. Predictably, coverage levels identified through finger marking may be significantly lower than those previously reported. It will be important to fully implement the national policy of repeating the supplementary immunization activities in all areas where coverage does not exceed 90%. Although this may appear harsh, the penalties at this time for poor performance are potentially severe.
10. Particularly as the policy on repeating supplementary immunization campaigns based on poor coverage performance is enforced, it is critical to ensure that all finger marking monitoring is clearly impartial and uninfluenced by any local factors or persuasion.

Communication

11. Recent developments in promoting more effective systems of communication strongly indicate the need for and advantage of locally relevant social mobilization. All districts, most especially those where finger marking monitoring demonstrates low coverage, should ensure that they are benefiting from experience in communication and should include appropriate social mobilization assessment and planning in their preparations for subsequent supplementary immunization activities.
12. The key factors in planning local social mobilization should include the identification of reasons for resistance to immunization, identification of the major concerns and knowledge needed in the community and identifying the most appropriate local media for transmitting health messages.

Security issues and short interval additional doses

13. The strategy of short interval additional doses (SIAD) should be widely developed for supplementary immunization activities in areas with difficult access. It is probable that the principle of administering a second dose of monovalent vaccine will prove appropriate for all areas, and the TAG recommends that, at least on a trial basis, it be included in mop-up planning even in areas with free access.
14. The TAG recommends continuation of the strategies developed for areas of poor security and endorses the recommendations of the Pakistan/Afghanistan TAG on strategies to be followed, including mapping of difficult-to-access areas, negotiating access whenever possible, seeking endorsement of polio eradication strategies from groups in conflict and the use of short interval additional doses (SIAD).

Sudan

15. The recent isolation of a wild poliovirus in Jonglei State is still being investigated. It is important that the investigation is completed as soon as possible to determine whether the case is the result of a recent importation or reflects continuing transmission from previous cases in Sudan.
16. Whether an importation or from continuing transmission, extensive mopping up should be conducted to control the outbreak, both on the Sudanese and the Ethiopian sides of the border. Mopping-up should include enhanced surveillance, again on both sides of the border, extending widely.
17. In view of the risk of importations into Sudan from Nigeria or Chad, the TAG recommends implementing two NIDs throughout Sudan during 2008, with particular attention given to ensuring that all populations living in areas of civil unrest are reached and immunized.
18. The TAG proposes that the authorities in Sudan should explore the possibility of establishing a system to immunize migrants and transient visiting or passing across Sudan in order to

minimize the likelihood of spread from possible importations of WPV. This system would be most appropriate if it reached and immunized groups travelling as families with possibly susceptible children. In developing such a system, possibilities should be explored for immunizing travellers at points of entry, in settlements or at or transit points.

Somalia

19. Programme staff should urgently review the case in Sudan to assess whether it has implications posing a particular risk to Somalia.
20. At least one additional NID round should be implemented before the end of 2008.

Yemen and Djibouti

21. Programme staff in both countries should review their immunization coverage data. Should this review confirm a decline in immunization coverage, the health authorities should conduct two rounds of NIDs before the end of 2008.

All Member States

22. All countries of the Region are urged to review and update their plans of action for dealing with importations, if necessary conducting briefing updates on new technologies such as the use of monovalent vaccines.
23. Countries should ensure that they have access to stocks of monovalent vaccines to deal with WPV importations, if necessary. These vaccines should be licensed for use in all countries.
24. Responsible staff in all Member States are urged to review their continuing surveillance system and its success in identifying and analysing AFP cases, and their achievements on a subdistrict basis for investigation of such cases, including specimen testing.

Use of inactivated polio vaccine (IPV)

25. The TAG confirmed that IPV should not be used in countries at risk of continued WPV circulation and further endorsed the policy document on IPV prepared by WHO and the SEPE.
26. The TAG emphasized that the major benefit of IPV when introduced into the immunization schedule is to minimize the risk of vaccine associated paralysis (VAPP) and urged Member States to further investigate and analyse cases of reported VAPP.

World Health Organization

27. The TAG proposes that the Regional Director for the Eastern Mediterranean host a consultation on polio eradication in Africa. The consultation should be held in association with the Regional Director for Africa and should be aimed at addressing the polio situation, as it is

currently affecting countries on the African continent and poses a continuing threat to the polio-free status of Member States in both Regions.

The Regional Director could present the considerable experience gained by staff and countries in the Eastern Mediterranean Region in the detection and control of epidemics, as typified by the flexible and successful control of polio in Somalia. The benefit of such experience could be shared in a practical way with the staff of countries facing similar problems.

28. In view of the strategic changes introduced related to the use of monovalent OPV and the introduction of IPV into immunization schedules, the TAG urges WHO to take full responsibility to inform and brief responsible national staff on the need and justification for introducing new vaccines and explain fully the perceived benefits and potential problems that might be encountered following their introduction.

Annex 1

PROGRAMME

Saturday, 12 April 2008

- 08:00–08:30 Registration
- 08:30–08:50 Opening remarks by H.E. Dr Ali Jaffer Mohamed, Chairman of Regional TAG
Message from Dr Hussein A. Gezairy, Regional Director, WHO/EMRO *Dr M. H. Wahdan, WHO/EMRO*
- 08:50–09:10 Follow-up on implementation of Fifth meeting's recommendations *Dr M. H. Wahdan, WHO/EMRO*
- 09:10–09:40 Global overview *Dr Bruce Aylward, WHO/HQ*
- 09:40–10:05 Update on endemic countries:
PAK/AFG TAG conclusions and recommendations *Dr Nicholas Ward, WHO/EMRO*
Progress, remaining challenges and status of implementation of recommendations:
- 10:30–10:45 Afghanistan *Mr Jalaa' Abdelwahab, WHO/EMRO*
- 10:45–11:00 Pakistan *Dr Hussain Bux Memon, EPI Manager*
- 11:00–11:15 Direct protection by vaccination, AFG/PAK *Dr Nicholas Grassly*
- 11:15–12:00 Discussion
- 12:00–12:50 Situation in high risk countries:
Sudan *Dr Salah Haithami, WHO/Sudan*
Somalia *Dr Abraham Mulugeta, WHO/Somalia*
Other countries *Dr Abdalla Elkasabany, WHO/EMRO*
- 12:50–13:15 Discussion
- 14:15–14:45 General surveillance progress and issues *Dr Faten Kamel, WHO/EMRO and Dr Humayun Asghar, WHO/EMRO*
- 14:45–15:00 Regional containment activities *Dr Humayun Asghar, WHO/EMRO*
- 15:00–15:15 Regional certification activities *Dr Javed Hashmi, WHO/EMRO*
- 15:15–15:30 Regional priorities and plans *Dr Faten Kamel, WHO/EMRO*
- 15:30–16:00 Discussion
- 16:00–17:00 Closed meeting of RTAG members

Sunday, 13 April 2008

- 08:30–10:00 Closed meeting of RTAG members
- 10:30–11:00 WHO position/research agenda with regard to IPV/OPV use *Dr Roland Sutter, WHO/HQ*
- 11:00–12:00 Situation in the Region *Mr Jalaa' Abdelwahab, WHO/EMRO*
- 12:00–13:00 Discussion
- 14:00–15:00 Discussion of conclusions and recommendations

Annex 2

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