

Report on the

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

Cairo, Egypt
21–23 October 2010



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CONTENTS

1.	INTRODUCTION	1
2.	IMPLEMENTATION OF THE RECOMMENDATIONS OF THE 7TH MEETING.....	1
3.	PROGRESS TOWARDS POLIO ERADICATION.....	2
3.1	Regional overview.....	2
3.2	Global overview.....	3
4.	EPIDEMIOLOGICAL SITUATION IN POLIO ENDEMIC COUNTRIES.....	5
4.1	Afghanistan.....	5
4.2	Pakistan.....	12
5.	EPIDEMIOLOGICAL SITUATION IN OTHER PRIORITY COUNTRIES	21
5.1	Somalia	21
5.2	Sudan (North)	23
5.3	Sudan (South)	25
6.	RECOMMENDATIONS OF THE HORN OF AFRICA TECHNICAL ADVISORY GROUP	27
7.	RISK ANALYSIS FOR POLIO-FREE COUNTRIES	28
8.	VDPV REGIONAL EXPERIENCE AND GUIDELINES	29
	Annexes	
1.	PROGRAMME	31
2.	LIST OF PARTICIPANTS	33

1. INTRODUCTION

The Regional Technical Advisory Group (RTAG) on Poliomyelitis Eradication held its eighth meeting at the WHO Regional Office for the Eastern Mediterranean in Cairo on 21–23 October 2010. The meeting was attended by members of the RTAG, national polio officers from Afghanistan, Pakistan and Sudan, representatives of polio partners (UNICEF, Centers for Disease Control and Prevention, Rotary International, Bill and Melinda Gates Foundation and United States Agency for International Development) and WHO staff from headquarters and the regional offices for Africa and the Eastern Mediterranean. Staff of WHO and UNICEF country offices for Afghanistan, Pakistan, Somalia and Sudan also attended, in addition to some members of the Technical Advisory Group for Pakistan and Afghanistan. The programme of the meeting and list of participants are attached as Annexes 1 and 2, respectively.

Dr Ali Jaffer Mohamed, Chairman of the RTAG, opened the meeting by welcoming all the participants. He acknowledged efforts made by all polio-free countries in maintaining polio-free status and expressed deep concern about the situation in Pakistan.

Dr Hussein A. Gezairy, WHO Regional Director for the Eastern Mediterranean, welcomed the participants and expressed sincere appreciation for the support extended by partners. He referred to the multiplicity of challenges facing the Region and their negative impacts on polio eradication efforts in the two remaining endemic countries, Afghanistan and Pakistan. Despite these challenges, the Eastern Mediterranean Region of WHO continued to proceed towards achieving the polio eradication target, with 18 Member States maintaining their polio free-status and Sudan successfully regaining its polio-free status after recovering from the epidemic that occurred as a result of importation. Dr Gezairy acknowledged the political commitment to achieving the target and the significant efforts and initiatives made by the programme, particularly the introduction of bivalent OPV, the development of comprehensive district-specific plans, improvements in the monitoring system through introduction of finger marking and independent monitoring and maintaining a very comprehensive surveillance system supported by a well-functioning network of laboratories.

Dr Gezairy ended his introductory remarks by asking the RTAG for advice on the appropriateness of ongoing strategies and on additional strategies or approaches to achieve the target.

2. IMPLEMENTATION OF THE RECOMMENDATIONS OF THE SEVENTH MEETING

Dr Ezzeddine Mohsni, WHO EMRO

Dr E. Mohsni presented the status of implementation of the TAG recommendations made during its seventh meeting on 20–21 July 2009.

The main recommendations were targeted at improving the quality of supplementary immunization activities. In this regard, efforts were made to review and update district microplans starting with high risk districts. In the updating, special emphasis was made to

ensure that the plan comprehensively covers all basic elements and fits with the characteristics of the district and address its challenges. Efforts were made to involve all influential people in the district.

Another activity being pursued to ensure the quality of work is to base assessment of the vaccination status on finger marking and base coverage data on assessment by independent monitors.

Addressing inaccessibility has been a major concern. A range of strategies is being pursued in conflict-affected areas; however, no real breakthrough has been achieved.

The recommendations concerning south Sudan are being implemented. There is evidence of improved surveillance and virus circulation appears to have stopped for over a year.

To reduce the risk of spread following importation, the population immunity profile in all countries is being monitored regularly and the subject will be discussed in the present TAG meeting.

The RCC expressed its satisfaction with respect to efforts made to implement its previous recommendations.

In the discussion that followed the following points were emphasized.

- The need to monitor population immunity by age, in particular the very young children
- The necessity to involve other sectors in support of immunization such as nongovernmental organizations
- The need to work towards creating demand in the population for vaccination of their children
- The need to ensure flexibility in timing concerning the conduct of campaign, together with other considerations such as scheduling immunization activities to continue in the afternoon

3. PROGRESS TOWARDS POLIO ERADICATION

3.1 Regional overview

Dr Tahir Mir, WHO EMRO

Most of the countries in the Region are polio free. The epidemic that started in south Sudan in 2008 has been stopped since more than one year. Afghanistan and Pakistan are the only endemic countries in the Region. In Afghanistan, circulation is localized in the southern part of the country and remaining areas are without any established circulation. In Pakistan 75% of the cases are from KP/FATA, where lack of access to children because of deteriorating security is major issue. Another area of concern is southern Punjab/northern Sindh, affected severely by floods which caused damage to the health infrastructure and major population

movement. South Sudan, Somalia and Yemen are at high risk, with large numbers of unvaccinated children and adequate proportion of unprotected children.

AFP surveillance indicators at national level are satisfactory (except in Morocco and Palestine for non polio AFP rate and Bahrain, Djibouti and Lebanon for the % adequate stools), but subnational data analysis is clearly showing gaps. In consideration of varying immunity level and surveillance gaps identified by sub-national analysis, a model is being constructed to assess the risk of wild polio virus outbreak following importation with the objective of timely alerting the countries, helping decision-making in prioritizing technical assistance and providing data for advocacy and funding requests. In 2010, AFP surveillance reviews were planned for nine country programmes: Afghanistan, Egypt, Lebanon, Morocco, Pakistan, Somalia, south Sudan, Tunisia and Yemen. Review was postponed in Pakistan due to devastating floods in the country. The joint efforts of the field and laboratory staff have resulted significant reduction the time from notification to final laboratory results. Supplemental surveillance activities included contact sampling from hot cases and cases with inadequate stools and also environmental monitoring.

Monitoring of global polio eradication milestones relevant to the region shows that south Sudan, which was labelled as having reestablished circulation, achieved the target of <10% missed children. In Afghanistan, none of the 13 high-risk districts in the south has achieved the target of <10% missed children in 8 consecutive rounds. In Karachi, Pakistan, 13 out of 18 towns have achieved the target of <10% missed children, but assessment of the situation in FATA indicates the target is not being achieved.

In summary, the polio-free status of 18 countries is being maintained. The P1 outbreak in south Sudan is over and there is improvement in AFP surveillance. Circulation in Afghanistan is localized and several innovative measures are being taken to overcome the situation. In Pakistan, the district specific planning strategy has worked well in Karachi and Quetta block but inaccessibility due to insecurity is a major challenge in FATA. Floods created epidemiological imbalance in southern Punjab and northern Sindh.

The regional office will continue its efforts to alert countries through the use of a risk assessment model. The laboratory network continued its excellent performance and all laboratories are accredited. Containment and certification processes are ongoing with significant progress.

3.2 Global overview

Mr Chris Maher, WHO HQ

A new global polio eradication strategic plan 2010–2012 was endorsed at the 63rd World Health Assembly, and launched by stakeholders on 18 June 2010. In keeping with guidance from the 126th WHO Executive Board, an Independent Monitoring Board was established in October 2010 to monitor the milestones and performance indicators of the strategic plan and to guide corrective actions.

The first quarterly report to the Independent Monitoring Board summarized the status of the major milestones at 1 October 2010 as follows.

- Countries with new polio outbreaks: no cases had been detected since 15 May 2010 in any of the 15 countries with new outbreaks in 2009. In the 10 countries which were newly infected in 2010, including Tajikistan, no outbreak persisted for more than six months.
- Countries with “re-established poliovirus transmission”: south Sudan had not detected poliovirus since 27 June 2009 and Chad since 10 May 2010. Countries which reported cases in the second half of 2010 were: Angola (20 August 2010) and the Democratic Republic of the Congo (2 September 2010).
- Countries with endemic poliovirus transmission: overall, in the four remaining polio endemic countries, polio cases declined by 85% in 2010, compared to the same period in 2009. In Nigeria, cases had declined by 98%, in India by 90% and in Afghanistan by 19%. In Pakistan, cases increased by 27%.

Although the first and third milestones of the strategic plan were broadly ‘on track’ at 1 October 2010, key challenges remain. In particular, the second, end-2010 milestone of stopping all re-established poliovirus transmission is at risk due to the persistence of transmission in Angola and the Democratic Republic of the Congo. In Angola, upwards of 25% of children continued to be missed during supplementary immunization activities in some areas of the country, contributing to an expanding outbreak in 2010 with cross-border spread into the Democratic Republic of the Congo. In addition, in the Democratic Republic of the Congo a virus which had not been detected since 2008 was isolated in the eastern province of Katanga in June 2010, suggesting gaps in the implementation of surveillance and supplementary immunization activities in the area.

The third, end-2011 milestone of stopping poliovirus transmission in endemic countries is at risk due to continued operational challenges in optimizing the quality of supplementary immunization activities in the persistent poliovirus reservoir areas of Pakistan. These challenges were further complicated by insecurity and conflict in FATA and the severe floods affecting the country in mid 2010.

With the declining incidence of wild poliovirus globally, Member States are taking additional measures to reduce the risk of new outbreaks caused by the international spread of wild polioviruses or the emergence of circulating vaccine-derived polioviruses. These measures include supplementary and routine immunization activities to close population immunity gaps and vaccination of travellers to and from polio-infected areas. Similarly, ensuring timely immunization responses to circulating vaccine-derived polioviruses has become increasingly important with the progress towards wild poliovirus eradication. In 2010, outbreaks due to circulating vaccine-derived polioviruses occurred in Afghanistan, Democratic Republic of the Congo, Ethiopia, India and Nigeria.

4. EPIDEMIOLOGICAL SITUATION IN POLIO ENDEMIC COUNTRIES

4.1 Afghanistan

4.1.1 Epidemiological situation

Dr Arshad Quddus, WHO Afghanistan

Wild poliovirus circulation continued uninterrupted in the southern region of Afghanistan, particularly in the Kandahar, Helmand and Uruzgan provinces. As of 23 October 2010, a total of 18 confirmed polio cases were reported, of which 15 cases are from the southern region, including Farah province.

Review of the distribution of confirmed polio cases over the past 3 years shows that more than 80% of the cases are reported from the 13 conflict-affected districts in the south, labeled as “high priority” districts. The median age of confirmed cases was 18 months and the median number of OPV doses received by the confirmed cases was 3. Afghanistan also reported 3 cases of VDPV2 in June to July 2010. These cases were reported from Marja part of Nadali district where almost 50% of children remained inaccessible in the last 9 supplementary immunization activities held during 2009–2010 and where routine EPI is also very low (12%) as assessed by the vaccination status of AFP cases.

The main reason for inaccessibility in this area is military operations followed by sporadic active conflict and landmines. The programme responded to VDPV2 with a small-scale campaign in 4 districts of Helmand targeting almost 300 000 children using tOPV.

The major challenges in the 13 conflict-affected high priority districts are access to children, safety of vaccinators and the need to improve campaign quality in those areas. A number of interventions are being done to cope with this challenge.

The Minister of Public Health constituted a policy group of which WHO and UNICEF representatives are members. This group meets on monthly basis to monitor progress in addressing strategic issues and take appropriate actions. An informal consultative group has also been constituted to focus on the 13 high-priority districts in the south.

To increase access and staff safety, close coordination with International Red Cross and Red Crescent Society (ICRC) has now led to a more expanded role for the ICRC with the introduction of influential people from within the community who are perceived as neutral and are acceptable to all parties in conflict.

Although the overall accessibility in the southern region is showing gradual improvement, the quality of campaigns remains below standard with constant reporting of zero-dose AFP cases, indicating areas and sub-groups of population who are not being accessed by the vaccination teams.

The recent ongoing intensified circulation in the bordering FATA/KPK area of Pakistan increased the risk manyfold in the bordering eastern and southeastern regions of the country.

As well, the outbreak in Tajikistan in areas close to the border with northeastern and northern regions of Afghanistan has increased the risk of importation in these areas, which did not have evidence of poliovirus circulation for more than 5 years. A number of actions were taken including mop-ups, vaccination of cross-border population movement through permanent vaccination posts, and enhancing the surveillance system sensitivity in the high-risk zone. As well, the programme has a preparedness plan to respond to occurrence of cases in areas of the country with no evidence of poliovirus circulation.

Based on the epidemiological situation, the country can be divided into three zones: a transmission zone of the southern region; a high-risk zone of eastern, southeastern and northeastern regions; and a non transmission zone in the rest of the country. This is to prioritize the areas and plan actions accordingly. The programme has been successful in preventing spread from the transmission zone to the 84% of the population living in polio-free areas.

4.1.2 Issues and initiatives in the south

Dr Arshad Quddus, WHO Afghanistan

Insecurity leading to inaccessibility remains the most challenging issue in the southern region in general, and the 13 high-risk districts in particular. Areas of inaccessibility and their magnitude were mapped out. Analysis of data by districts shows that although inaccessibility has decreased in most of the districts, this did not happen in the 13 high-priority districts where the number of non-vaccinated children has increased in the last 3 rounds. Delayed payments of vaccinators and supervisors has been behind this increase.

Several efforts are being made to improve the campaign management and quality in the southern region, particularly in the 13 high-risk districts. District-specific plans have been updated, district managers hired, special training for supplementary immunization staff completed and communication plans have been integrated. The issue of delayed payment is being resolved.

For the population internally displaced due to military operations, active fighting and air strikes, the programme established permanent vaccination posts at the entry and exit points. A total of 6 such posts are functioning since May 2009. On average 18 000–20 000 children are vaccinated every month at these posts.

Additional steps were taken in south including a mop-up in 5 districts of Kandahar in response to NSL1 case from Shawalikot district. To boost routine immunization, three rounds of outreach campaigns were conducted in the urban slum areas of Kandahar city. As well, a small-scale target campaign was carried out in response to VDPV2, using tOPV and targeting almost 300 000 children.

4.1.3 Surveillance quality

Dr Arshad Qudus, WHO Afghanistan

As of 2 October 2010, 1182 AFP cases were reported through the national AFP surveillance system. Of these, 18 cases were confirmed polio, and 4 polio-compatible cases. 10 of the confirmed cases are of type 1, while 8 are of type 3. 28% of the AFP cases were reported by community-based reporting volunteers.

Analysing the major AFP surveillance indicators, it is clear that all the regions and provinces are achieving a non-polio AFP rate above 2 per 100 000 population and stool adequacy above 80%. More than 80% of the AFP cases are reported within 7 days of onset of paralysis in all regions, except in the southern region (69%).

An international AFP surveillance review was held on 22–28 August 2010. The review covered 13 provinces of 5 regions. The main findings include the following.

- Awareness is high among health care providers and reporting volunteers. The AFP focal points were found to be well trained on various components of AFP surveillance and were linked to their community-based reporting volunteers.
- AFP cases are generally detected in a timely manner, properly investigated and well documented.
- Stool specimen collection, storage and transportation are carried out appropriately and records of active surveillance and zero reporting were well maintained.
- The review found that some of the reported AFP cases were excluded as non AFP, even some reported by medical doctors.
- The review concluded that based on its findings, ongoing circulation of wild poliovirus in the areas reviewed is very unlikely to be missed.

AFP surveillance quality in the southern region in general and 13 conflict-affected districts in particular shows that AFP surveillance indicators in most of the provinces in the southern region meet the set standards but early case detection rate in Helmand was 53% while there is very high proportion of male AFP cases reported from Uruzgan indicating the probability of under-reporting of female AFP cases.

A number of steps are being taken to maintain AFP surveillance in the conflict-affected areas, including training of district support teams from the districts and the provision of transport cost to families of AFP cases to bring them to health facility.

However, analysis of surveillance indicators and AFP case reporting shows some shortages in surveillance. In one district in Kandahar, one in Helmand and two districts in Uruzgan, the number of reported AFP cases is less than the expected number. Moreover, the reporting of polio compatibles and genetic sequencing data point to gaps in the surveillance system in these areas.

It could be concluded that apart from some of the very difficult-to-access conflict-affected areas, the AFP surveillance system is of good quality, sensitive enough to detect transmission and able to provide consistently the evidence of poliovirus circulation.

4.1.4 Campaign quality

Dr Agha Gul Dost, Afghanistan

The programme continued to implement NIDs, SNIDs according to the recommended plan. In addition, two rounds of mop-ups with mOPV1 were conducted in the northeastern region, along with one round of mop-ups in 5 districts of Kandahar using bOPV, one case response to VDPV2 in 4 districts of Helmand using tOPV and one mop-up in Nangarhar province of eastern region using bOPV. In the October 2010 round, albendazole was introduced for de-worming all children 2–5 years of age.

Post-campaign assessment is done through independent monitors, usually teachers and medical and university students. The results of the household coverage survey showed that most districts had coverage over 90% based on the finger marking, except in the southern region where 60%–70% of districts did not achieve 90% coverage. A survey conducted at various public places like hospitals, bus stations, markets and shrines also showed that except in the southern region, coverage in the rest of the country was at least 90%. The northeast, southeast and eastern regions have shown significant improvement in underperforming districts.

The target set in the milestones of the global strategic plan is that each of the 13 high-risk districts achieves coverage over 90% in at least 4 supplementary immunization activities. Coverage rates assessed by independent monitors and adjusted for accessibility show that this has not been achieved.

Analysis of the reasons for missing children in the last 4 campaigns shows that “no team visit” or reporting that the child was newborn/sleeping were the two main reasons, indicating weakness on the part of service provision and insufficient community demand for vaccinating newborn/young infants.

Several actions are being taken to improve campaign quality including involvement of nongovernmental organizations implementing the Basic Package of Health Service (BPHS) development of district specific plans, hiring of access negotiators and partnership with ICRC, which is planned to be expanded further with involvement of Afghan Red Crescent Society (ARCS) network of community-based first aid health workers. In addition, supplementary immunization activities are synchronized with Pakistan and vaccination posts are established to cover the population moving between Afghanistan and Pakistan.

4.1.5 Communication activities

Dr Nafî Kakar, UNICEF Afghanistan

The significant commitment of government and partners has been further strengthened through the establishment of the Polio Core Group at Ministry of Public Health level. This

group meets on a monthly basis to review progress, particularly in the 13 high-risk districts. Advocacy with communities at local level has been enhanced to generate support for programme implementation and gaining access.

Based on KAP findings and inputs from the field, a nationwide polio communication strategy and plan was developed and implemented with special focus on the 13 high-risk districts. Media mapping exercises were conducted and local media identified and involved to reach inaccessible families with information on polio. This was verified by the post campaign assessment (PCA) data. Community mobilization activities have been strengthened through social mapping and planning exercises, as well as expanding social mobilization initiatives in high-risk clusters.

Other major initiatives included the following.

- Revision and production of information/education/communication/training materials;
- Cross-border communication;
- Enhancing visibility of supplementary immunization activities through public announcements, billboards, posters, rallies and sports events.

Based on the recommendations of May 2010 TAG meeting, the key strategies for the high-risk areas of the southern region were to develop a specific communication strategy and district-specific plans. A workshop was held in June to develop the district-specific communication plans for the 13 high-risk districts which were implemented for the July and subsequent rounds. Progress has been made in social and partner mapping and enhanced use of messaging via radio, mobile phones and television.

Despite these advances, some challenges are still being faced, particularly access, population movement, coordination, inadequate public awareness and sporadic/hidden refusals.

As part of the 2010–2012 strategic plan, UNICEF Afghanistan will continue to support the goal of polio eradication by sustaining political commitment, enhancing local engagement, strengthening partnerships, improving access in security-compromised areas, reducing missed children and increasing visibility.

To achieve these targets, the following actions will be undertaken:

- Strengthen and institutionalize community mobilization
- Build capacity of community mobilizers
- Strengthen monitoring mechanisms
- Expand partnerships with local-level nongovernmental organizations – partner mapping
- Review information/education/communication material, especially key messages
- Improve coordination at different levels
- Document and disseminate communication effort
- Use research findings from epidemiological and social data for further strengthening and guiding communication activities.

Discussions

- The RTAG noted that although 84% of the Afghan population lives in polio-free areas, this proportion has not materially increased during the past two years. Programme policies to achieve access to children in areas with difficult access are showing some success, but not in areas with persistent WPV transmission, where accessibility remained largely unchanged.
- Persistent transmission of both WPV1 and WPV3 resulting in polio cases is predominantly restricted to the southern region, mostly in areas with difficult access to populations and with poor security for vaccination staff. In addition, two cases caused by type 2 VDPV have been identified in difficult-to-access areas of the southern region.
- It appears that WPV1 circulating in the southern region has its origin from Pakistan through importations predominantly from the Quetta block of Baluchistan province. Importation elsewhere has not resulted in persistent spread, probably reflecting relatively high immunization coverage in recipient areas.
- There appears little evidence that importation of WPVs from Afghanistan is a significant element in the continuation of persistent transmission in Pakistan.
- Analysis of confirmed polio cases has shown a mean age of 18 months. They are mostly under-vaccinated and very few cases received any OPV doses through routine immunization.
- In spite of the great difficulties facing the programme in the south, the programme continued to institute improved AFP surveillance, outbreak response and supplementary immunization activities under considerable difficulties in areas with difficult access. The RTAG noted with appreciation the following strategic areas contributing to this success:
 - Preparation and implementation of district-specific plans.
 - Recruitment of negotiators to meet and secure cooperation from anti-government elements
 - Coordination with local agencies able to work in difficult areas.
- The RTAG was pleased to note the following specific initiatives aimed at strengthening the polio eradication programme.
 - Establishment of a policy group, chaired by the Minister of Public Health, which is meeting regularly.
 - Creation of a consultative group chaired by the Director-General of Public Health, meeting regularly.
 - Expansion of the role and geographic responsibility of the ICRC.
 - Regular review and strengthening of district level planning and management.
 - Efforts made with donors to designate the 13 high-risk districts in the south among priority districts for receiving support.
- The communication element of the programme has recently developed significantly. Its potential to secure community cooperation for immunization and surveillance is increasing.
- In spite of the progress being made towards polio eradication in Afghanistan, the RTAG identified a number of constraints that may delay not only the interruption of WPV transmission but also the development of routine immunization services.

- In the southern region, a significant number of children are not receiving a sufficient number of OPV doses (ideally 6 doses in first year of life). This reflects insufficient targeting of children 0–6 months of age.
- There are many examples of children living in areas with no limited access not receiving OPV during supplementary immunization activities. This is often due to poor supplementary immunization activities quality due to insufficient planning, inadequate vaccinator training, inadequate supervision and insufficient targeting of the under one year age group.
- There is insufficient flexibility in ensuring that children are immunized at every appropriate contact. Rigid duty statements means that non-vaccination staff fail to vaccinate eligible children during attendance at health unit for other reasons.
- The surveillance review in 2010 identified that some of the reported AFP cases were excluded posing the potential risk of missing WPV transmission.
- There is evidence that female children, especially in areas of conflict, are insufficiently represented in AFP reporting and investigation.

Recommendations

The RTAG endorsed the recommendations of the Pakistan/Afghanistan TAG of May 2010 concerning supplementary immunization activities and the vaccine to be used, and made the following additional recommendations.

1. In areas where WPV transmission persists or remains a significant threat, district-level plans should be reviewed and strengthened. Within these plans, a more flexible approach to immunization should be adopted, aiming to immunize eligible children during any attendance at health units, ensuring that all staff can provide vaccines and aiming to increase the frequency of immunization sessions and change their timing to be appropriate for the community.
2. Agencies, especially those contracted to provide immunization services, should also aim to provide vaccines, especially OPV, during any health contacts and when supplying humanitarian assistance.
3. In all areas, but especially where WPV transmission persists, there is a need to guarantee the quality of immunization services, both routine and supplementary, through effective planning, conduct and assessment.
4. In all efforts aimed at improving the quality of immunization, special focus should be placed on targeting OPV administration at the youngest age groups, aiming to achieve multiple doses in all children before the age of 1 year.
5. Comprehensive AFP surveillance should continue to be developed throughout Afghanistan, but especially in border areas, where importation of WPV remains a real possibility.
6. Steps should be taken to ensure that all AFP cases reported by physicians are fully and expertly investigated, removing all barriers to the unwarranted exclusion of cases from whatever source.
7. Gender analysis should be included in reporting AFP and exploration should be made of the factors prevalent in any area where there is a significant imbalance between male and female children reported with AFP.

8. In areas of difficult access, especially those where WPV transmission is persisting, consideration should be given to using animal health units and their staff in assisting in mapping, planning and securing community compliance during supplementary immunization activities and the development of routine immunization services.
9. In areas where responsibility for developing immunization services has been delegated to nongovernmental organizations, their accountability, performance and effectiveness should be assessed. Include assessment of specific polio eradication indicators should be included in the balance scorecard.
10. Communication services should be further developed as an integral part of district-level planning especially in areas of difficult access and wherever WPV transmission is continuing. Experiences should be monitored and feedback provided and performance indicators developed and used.
11. To the extent possible, the accuracy of denominators being used in assessing baseline results in both surveillance and immunization coverage should be verified.

4.2 Pakistan

4.2.1 Epidemiological situation

Dr Ni'ma Abid, WHO Pakistan

As of 20 October 2010, Pakistan had reported 40% more polio cases compared with the same time of 2009 (93 cases and 62 cases respectively). The majority of cases (72%) were reported from the Federally Administered Tribal Areas (FATA) and neighbouring districts of Khyber Pakhtunkhwa (KPK) province. Both serotypes of wild poliovirus (type 1 and type 3) are circulating in FATA. Another significant epidemiological development in 2010 is the outbreak of WPV1 in north Sindh. All the four provinces reported both serotypes of WPV with predominance of WPV1 except in Balochistan, where WPV3 is the predominantly isolated virus.

Analysis of the genetic and epidemiological data of isolated wild polioviruses from polio cases and environmental samples indicates continued endemic circulation in the transmission zones, multiple outbreaks of WPV1 and reestablishment of circulation in the central part of Pakistan (south Punjab and north Sindh)

The deteriorating security situation, weak performance in key districts and the massive floods with associated population movements are the main predisposing factors for the upsurge of polio cases in 2010. The main epidemiological characteristics of polio cases are as follows.

- Nearly two-thirds of cases are children younger than 2 years (median age: 17 months; range: 3–156 months).
- As per recall of parents, analysis of vaccination data of polio cases indicate:
 - median number of OPV doses is 2 for cases from conflict areas and 6 for cases from areas with no major security issues
 - 44% of cases received 4 OPV doses
 - 18% did not receive any OPV dose (73% for cases from insecure areas)

- 62% of cases did not receive any routine OPV doses.

Considering the extensive population movement in Pakistan and the intensity of wild poliovirus circulation, all the districts in Pakistan are at high risk. Hence, intensive high quality immunization activities during the next six months are required to contain the multiple outbreaks and interrupt the re-established circulation in central Pakistan.

4.2.2 Issues and initiatives in endemic high-risk areas

Dr Altaf Bosan, Pakistan

Two major issues are behind endemicity in high risk areas. The first is insecurity, especially in FATA and some parts of KPK province, Balochistan province and Karachi city. The security problem hampers accessibility and effectiveness of the monitoring and supervision of supplementary and routine immunization activities in the affected areas of southern Punjab and northern Sindh. Secondly, weak management of campaign operations is an obstacle, especially in Quetta, Killa Abdullah of Balochistan and Karachi. Pockets of refusals (in FATA and Killa Abdullah) and low routine immunization are also important issues in endemic and high-risk areas.

To address these issues, specific actions and initiatives are being taken since the second half of 2009 and specifically after the last TAG meeting.

- Developing a special strategy to improve accessibility including the following actions.
 - Establishment of a crisis task force for polio eradication by the governor. Civil military coordination committees were notified in every tribal agency.
 - The Governor KP/FATA and Chief Minister jointly chaired a meeting on 4 October 2010 on polio eradication.
 - Mapping of inaccessible areas and identifying ‘power centres’. In this regard it was noted that almost two thirds of the more than 350 000 inaccessible children live in areas controlled by the army.
 - The impact of this strategy has been negligible so far due to failure to involve anti-government agencies.
- Strict implementation of the decision of the Interministerial Interprovincial Committee on Polio concerning ‘payment for performance’.
- Visiting the Minister of Health Quetta to deliver a message to district level executives (DCOs) for personal support for polio eradication.
- Regular feedback from the Federal Secretary to the Chief Secretaries, Secretaries of Health and DCOs.
- Meeting of Chief Secretaries with DCOs to review polio eradication implementation of efforts. These were held in the three provinces with persistent transmission zones.
- Refining and rigorous monitoring of implementation of the specific plans for highest risk district/towns/agencies.
- Specific strategies for highest risk areas/populations, such as for example migrant populations.
- Improving routine immunization coverage through polio eradication efforts, particularly advocacy and use of monitoring opportunities in recording of zero routine dose infants.

These initiatives have resulted in some recent improvement in the process, except in FATA/KPK because of lack of security. In other areas the insufficient political buy-in, despite several strategically significant steps taken (e.g. linking payment with performance), remain as a main factor behind weak impact of these initiatives. As well, the massive floods in recent past have exacerbated underlying risk factors in many areas and the appearance of WPV in otherwise 'silent' areas.

4.2.3 Surveillance quality

Dr Obaid Ul Islam, WHO Pakistan

Surveillance continued its quality performance with a very sensitive system. Each AFP case is investigated by the WHO Surveillance Officer and eligible cases as per virological case classification are presented to the Expert Review Committees. In addition to ongoing in-depth analysis of surveillance data during the monthly provincial meetings, field reviews are conducted to assess the quality of the surveillance system and time-bound action plans are developed to address identified issues.

All the surveillance recommendations of the last Pakistan TAG (May 2010) were implemented; however, the planned field assessment of surveillance quality had to be postponed due to massive floods. Environmental surveillance is being implemented involving sites from all provincial capitals and two large urban populations in Punjab.

The AFP surveillance infrastructure supported the emergency phase in the recent flooding across the country.

Almost all of the reported AFP cases are being investigated within 48 hours of notification. All the key surveillance indicators for AFP cases indicate that the quality is above the global standards. As well, there is consistency in the quality of surveillance down to the district level (92% districts have non polio AFP rate of 2 or above and 89% of districts have $\geq 80\%$ AFP cases with adequate specimens). Collection of specimens from eligible contacts is also up to the standards.

Despite the heavy workload (>9000 specimens in 2010 so far), the polio laboratory performance remained high and concordant with the quality checks conducted regularly by CDC for both virological and genetic data. Genetic data analysis is monitored very closely and is used to identify potential gaps in surveillance. Wherever any gap is identified, detailed data analysis and field assessment are carried out. There is close coordination between surveillance and laboratory staff which has resulted in remarkably rapid case response vaccination.

Current AFP data show that the surveillance system continues to function effectively in the most troubled parts of the country having persistent security concerns like FATA.

One of the priorities of the polio eradication programme is to ensure maintaining high standard quality and consistency of AFP surveillance. To this effect, regular internal programme review and quality monitoring are being implemented. A special international

surveillance review with tailored methodology to assess surveillance quality in migratory populations and populations at risk of being missed is planned in the first quarter of 2011.

4.2.4 Campaign quality

Dr Altaf Bosan, Pakistan

Many initiatives have been taken in 2010 to improve the quality of the supplementary immunization activities including: outsourcing training of teams and field supervisors to a consultancy firm; introducing a new tally sheet for better micro-census, improved monitoring and tracking of un-reached children; and developing guidelines for independent monitoring, finger-marking, high-risk populations and insecure/conflict affected areas (FATA). The district-specific plans are monitored regularly and performance based payment is being implemented since March 2010.

The persistent transmission zones and high risk areas (15 highest risk districts) were included in all supplementary immunization activities. These districts have been given special focus for improving all immunization activities and to ensure quality planning, implementation, supervision and monitoring by deploying additional staff during activities. Implementation of district/area specific plans implementation status is being monitored/reviewed on monthly basis followed by the submission reports to the provincial level.

All the highest risk districts achieved the minimum target of $\geq 90\%$ vaccination coverage verified by finger marking in July NIDs except Bajour, Mohmand and Khyber agencies. There is a progressive improvement in 2010 supplementary immunization activities particularly in the highest risk districts, but inconsistency at sub-district level remains a challenge as shown by high number of poorly covered, missed areas and high number of union councils having $< 90\%$ coverage by finger marking.

The programme continues to give special attention to the process of post campaign monitoring by completely independent monitors. More than 5% of the clusters taken by the independent monitors are verified by the WHO team for further ensuring the consistency/validity of data. In addition, market (spot) surveys are carried out by the UN staff on day 5 of the campaign.

A field assessment was undertaken by trainees of the Field Epidemiology and Laboratory Training Programme (FELTP) in January 2010. The assessment was carried out in Multan and Muzaffargarh districts of Punjab province following the January 2010 campaign. The results showed the same trend and further augmented the validity of the independent monitoring data. The consistency of the supplementary immunization coverage across different diverse data sets reinforces the validity of Pakistan's independent monitoring data.

*4.2.5 Impact of floods on polio eradication and actions taken
Dr Ni'ma Abid, WHO Pakistan*

Heavy monsoons and massive flooding at end of July and early August 2010 caused widespread destruction across the country. A total of 78 districts and 20 million persons were affected. Damage to infrastructure has been colossal in many places. This national emergency resulted in an immediate shift of priorities, necessitating urgent interventions in the emergency phase. Scheduled polio eradication activities had to be delayed (surveillance review) or adjusted in time (August targeted supplementary immunization activities for the highest risk populations within the highest risk districts). Other immediate effects included disrupted communications and health service delivery infrastructure. These factors combined with population movement from endemic to polio free areas together with environment related aspects resulted in enhanced transmissibility of WPVs.

The polio eradication resources were immediately mobilized to the flood affected areas. A total of 44 local district level as well as 10 international polio staff were mobilized to support planning and implementation of the relief activities. Special emphasis was given to supporting the Disease Early Warning System (DEWS), outbreak investigations and visits to camps for orientation of health care providers, for information sharing/collection as well as supporting and supervising immunization activities. Teams and leaders were mobilized to flood affected districts for developing regional hubs for relief activities at Sukkur, Multan and Hyderabad. Rapid assessment of damages to health infrastructure was collected using a standard format. Risks to polio and measles were highlighted with policy level leadership and development partners.

Measures to avert risk to polio eradication included administration of OPV to 565 192 children below age of 5 years in flood-affected areas, mostly IDP camps, expansion of September SNIDs to a full NID and an additional measles plus mOPV1 dose in the flood-affected areas, the latter in two phases. A total of 7 948 232 children were vaccinated with mOPV1 in the first phase. In the last NIDs, finger-marking coverage evaluated by independent monitors reflected that all flood-affected districts included had coverage figures over 90%. As result of steps taken, the AFP surveillance system remained functional and surveillance indicators were maintained.

However, these steps could not prevent a surge in polio cases in central Pakistan, which was the area worst affected by floods. Epidemiological data indicate that polio cases from flood-affected areas have a median age of 36 months compared with 16 months for the country as a whole, but with higher median number of OPV doses as per recall of parents (4 for all cases and 7+ for flood-affected areas). Genetic data reflect an introduction in north Sindh, probably having a common source outbreak. The programme intends to maintain continued focus on intensified surveillance and extensive monitoring of vaccination activities in the flood-affected areas. The long-term plans include rehabilitation of EPI services.

4.2.6 Communication activities

Dr Abid Raza, UNICEF Pakistan

Following the Afghanistan/Pakistan TAG recommendations, communication interventions have been scaled up in line with the current understanding and evolving polio epidemiology. The primary focus remained on 15 highest risk districts and 58 priority districts in all the provinces.

Efforts have been made to: 1) continue advocacy for enhanced support, ownership and motivation with focus on provincial, district and sub-district levels, 2) engage media and enhance IPC to maintain high level of acceptance and create demand among the general public; 3) improve service delivery with the objective of reaching the most vulnerable populations; and 4) expand partnership

All 15 high-risk districts/areas and 58 priority districts have communications capacity (human resource and logistics) supported by communication officers and health officers at national and provincial levels. There is a continuous tracking of communication indicators both by time (monthly) and geographically (provincial). District report cards are produced quarterly. Data driven, locally appropriate plans and maps are available in all targeted districts. The reasons for missed children are systematically analysed and monitored to assess the effectiveness of the locally employed social mobilization strategies.

The ongoing partnerships with media, National Database and Registration Authority, National Highways and Motorways Police, Pakistan Postal Services, city traffic police of large metropolises and telecommunications and print and electronic media sectors have been further strengthened. More than 100 000 of the target children are reached every supplementary immunization round through these partnerships, especially children who are on move.

Furthermore, involvement of parliamentarians in promoting immunization has been initiated through the establishment of national and provincial caucus for immunization. As well, the involvement of religious leaders at all levels is being ensured and strengthened through the Inter-Religious Council for Health.

The outcomes of these interventions have been significant.

- 99% of the articles in print and electronic media have been positive about immunization and also about the vaccination. This has played pivotal role in countering rumours against campaigns and poliovaccine.
- Follow-up KAP studies show that the awareness level for polio has risen up to 81% (KAP-2009). The follow-up KAP is scheduled after the November 2010 supplementary immunization activities.
- Refusals have been reduced to fewer than 1%, but a few persistent pockets of refusals and hidden refusals are still an issue in some parts of FATA and in the Quetta block in Balochistan. To overcome these refusals, local community elders and religious leaders

are being mobilized through agency health communication officers and social mobilizers.

The priorities of the communication activities include:

- Continued advocacy efforts with the immunization programme in support of outreach activities
- Exploring venues to achieve access in security-compromised areas
- More focus on high-risk areas and priority districts/areas
- Implementing the communications review (previously scheduled in August but not conducted due to floods)
- Cost effectiveness analysis of various interventions, systematic use of data down to the grass-roots level and expanding partnerships.

4.2.7 Cross-border coordination between Pakistan and Afghanistan

Dr Ni'ma Abid, WHO Pakistan

There is extensive population movement across the borders between Pakistan and Afghanistan. It is estimated that over 3 million Afghan refugees now reside in Pakistan since the start of Afghan war. Most of these refugees are living in KPK/FATA and Baluchistan. Population movement between Pakistan and Afghanistan is not restricted to border areas but also extends to most parts of Pakistan.

Permanent transit vaccination points have been set-up at border crossings in Baluchistan and KPK/FATA in areas with maximum population movement. Temporary vaccination posts at transit points are also set up during vaccination campaigns at points where there is significant movement.

More than 1 million children under 5 years of age cross the border each year. Up to date in 2010, over 180 000 children crossing the border from Baluchistan and over 500 000 children crossing the border in KPK/FATA were vaccinated.

Cross-border coordination with respect to polio eradication efforts continued to be of a very good standard. AFP cases are immediately cross notified (34 cases notified to Afghanistan; 1 to Pakistan in 2010). Vaccination campaigns in the two countries are synchronized such that they either overlap or are close together for good coverage in border areas through coordinated activities.

Several key activities and steps are behind the successful cross-border coordination: high level political commitment recognizing the need for cross-border coordination and regular intercountry meetings, the latest being held in February 2010. As well, monthly meetings are held between Afghanistan–Baluchistan teams. In addition there is regular sharing of information including immediate notification of cross-border cases, weekly exchange of AFP cases line list from border areas and regular sharing of information on hot and confirmed cases. Standard operating procedures (SOPs) for notification of AFP cases have been established.

All stool specimens from AFP cases and contacts from Afghanistan are tested in the WHO NIH laboratories in Islamabad, Pakistan.

Discussions and conclusions

- The RTAG noted with alarm the increase in the number of reported cases and spread from the districts/areas of persistent transmission to other previously polio free areas. It also noted that the security challenges facing the interruption of transmission in some districts have not only escalated but were also compounded with other challenges, namely flood and extensive population movement.
- The increase in cases of poliomyelitis is the result of the chronic failure to reach children with polio vaccine in both accessible and access-compromised areas. Furthermore, there is discordance between reported cases and reported supplementary immunization activities coverage obtained through monitoring, indicating a gap in credible coverage data.
- Poliomyelitis cases are mainly affecting very young children, with more than two-thirds of the cases under the age of 2 years. The median age of cases is 17 months, indicating that poliovirus transmission is intense among infants. In addition, the RTAG notes that the majority of cases are not fully vaccinated.
- The development and implementation of district-specific plans to address their challenges and enhance the quality of work in the 15 persistently infected districts have succeeded at least in some of these districts, as evidenced by the positive impact on the epidemiological situation.
- The implementation of performance-based remuneration of vaccination teams and supervisors is noted with satisfaction.
- The initiatives made by FATA authorities in developing strategies for insecure areas and starting to develop flexible individual agency plans are noted with satisfaction. The multiplicity of approaches being tried to engage key stakeholders and influencers in FATA is expected to facilitate reaching inaccessible children.
- It is satisfying to note that despite repeated supplementary immunization activities, the community is not displaying any significant resentment towards repeated vaccination.
- The RTAG noted with appreciation the continued support and advocacy efforts made by the WHO Director-General and Regional Director in support of polio eradication in Pakistan. It is hoped that their forthcoming visit would, in addition to high level advocacy to ensure full engagement in polio eradication efforts, include direct reflections with district/local management authorities.

Recommendations

The RTAG, having reviewed the epidemiological situation of polio eradication in Pakistan, emphasized that in the context of the ongoing poliomyelitis epidemic, confounded by the devastating floods and significant population movement, there is an urgent need for establishing an aggressive plan of work, common across technical and administrative branches of government for implementation starting latest by 1 January 2011. This plan should exploit the lessons learnt from the many years of experience in Pakistan, where inadequate ownership, insufficient transparency and lack of accountability have been among

the main constraints behind delays in achieving the long-awaited target of polio eradication. The plan should also build on the success of recent initiatives such as district planning and the introduction of bivalent OPV. To this effect, the RTAG made the following recommendations.

1. Building on the experience gained from the successful management of previous earthquake and flood disasters through the establishment of special and strong coordination entities at the highest administrative level of the country, and noting that the current impediments to the polio eradication programme are not technical but managerial and operational, the RTAG strongly recommends the establishment of such a mechanism (e.g. national task force) at the highest administrative level of the government (Prime Minister's office) to have overall responsibility for coordinating the implementation of this plan and its monitoring. This body/task force will be crucial in ensuring the required intersectoral collaboration at federal and provincial level to successfully implement poliomyelitis eradication activities. Such a body would be essential to optimally support of subnational bodies such as the crisis task force for polio eradication established by the Governor of KPK/FATA
2. There is an urgent need to strengthen and further develop the present mechanism of engaging the local political and administrative leadership in support of the district health department by having the District Coordination Officers (DCOs) taking charge of the overall supervision of the eradication activities in their districts, especially supplementary immunization activities.
In this regard, it is essential to ensure that provincial chief secretaries hold regular meetings at least once a month with DCOs to follow-up the implementation of the polio eradication plans in their districts and ensure their continued engagement and support. It is equally important to develop mechanisms and criteria to measure and track engagement of the district leadership, particularly in relation to supplementary immunization activities performance and accountability.
3. The intensive microplanning exercise carried out for the 15 districts/localities labeled as persistently infected should be expanded to other districts classified as high risk not later than end December 2010 to ensure comprehensive micro-planning, effective implementation and community engagement.
4. The RTAG urges the Government of Pakistan to hold a meeting of the Inter Provincial Ministerial Coordination Committee on Polio (IPCP) before the end of the year, to review progress in implementing district specific plans in the 15 persistent transmission districts, and ensure the development of district specific plans for the high risk areas. As well, it is essential that IPCP discusses strategies to access children in conflict affected areas and children in mobile and migrant populations.
5. The present system of independent monitoring of supplementary immunization activities should be improved and developed with particular focus on process monitoring and validation of data in order to provide a clear picture of performance, particularly in high-risk areas.
6. Recognizing the special administrative set up in FATA, the current security situation, the multiplicity of influencing forces and the outbreak of polio which is driving polio transmission in much of Pakistan, polio eradication activities in FATA areas should be planned and conducted as a special activity. The RTAG recommends that every possible mechanism be used to bring all the players on board including antigovernment elements.

It also recommends ensuring flexibility and optimizing every window of opportunity that may arise to vaccinate children, including implementation of short interval repeated doses.

7. The RTAG endorses the recommendations of the national TAG, made in its meeting in May, with respect to the schedule of supplementary immunization activities in the remaining period of 2010 and 2011 and type of vaccine to be used. It, however, feels that with the new developments and spread of the wild virus to many new areas, the planned December supplementary immunization activities ideally should be converted to a full NID.
8. The international human resources available to the national programme should be strengthened, particularly in management aspects, through recruitment of management experts to support the present structure.
9. The present communication system should be reviewed and further developed, giving particular emphasis to sustaining community engagement and develop strategies for demand creation among communities.
10. Although primary emphasis should be on interrupting wild poliovirus transmission in the shortest possible time, efforts should be made to maintain the present satisfactory standard of surveillance and conduct surveillance review aiming at identifying gaps that need to be addressed. As well recognizing the devastating effect of floods on health infrastructure including those for immunization, it is strongly recommended that relief resources would give priority attention to the reestablishment of the destroyed immunization structure particularly cold chain which is one of the backbones to ensure effective immunization services.

5. EPIDEMIOLOGICAL SITUATION IN OTHER PRIORITY COUNTRIES

5.1 Somalia

Dr Abraham Mulugeta, WHO Somalia

Somalia has maintained its polio free status for the past 3½ years (last case was reported in March 2007). The key AFP surveillance indicators are maintained at certification standard. The achievements of the polio eradication initiative in Somalia can be attributed to the high community acceptance for polio vaccination, the support of religious and clan leaders, the dedication and quality work of local staff and volunteers, the support of tens of nongovernmental organizations, very good coordination and collaboration between polio partners and the significant support of donors.

Since late 2009, accessibility of children started to face problems. The two rounds of NIDs recommended by the Horn of Africa TAG in 2009 have been implemented successfully in all regions except Lower Shabelle (due to lack of permission of the local authorities). As of mid 2010, the programme faced a new challenge: lack of permission from the local authorities to conduct any campaign mode activities (both NIDs and child health days) in the South and Central Zone (SCZ). Hence, the estimated 800 000 children under 5 in SCZ (i.e. about 40% of the total Somalia target) have so far not been reached with the planned two rounds of NIDs in 2010. The build-up of susceptible children under 5 and the occurrence of cVDPV in the SCZ

are major concerns, which require follow-up with vigilance. Continued lack of permission to vaccinate children makes it difficult for the programme to respond properly. Efforts to obtain permission are ongoing, and these areas are targeted for special attention and support.

Although there is an increase in the level of routine immunization in Somalia, it is still very low and does not exceed 50%. As well, there are variations between different regions.

The OPV vaccination status among the population under 5 is closely monitored (from the AFP database and quality of supplementary immunization activities). The impact of cessation of supplementary immunization on the immunity profile is not yet shown clearly, but it is expected to be clear in the near future.

The programme is working to maintain highly sensitive AFP surveillance at national and subnational levels with special attention to the south/central zone, and is maintaining the ongoing cross-border coordination and case notification.

Discussions and conclusions

The RTAG while noting that Somalia remained polio free since early 2007 expressed serious concern about the non involvement of nearly 800 000 children under 5 living in SCZ in supplemental immunization activities since early 2010. It described this situation as a time bomb which would have serious consequences should a wild virus be introduced. The appearance of CVDPVs in the same areas is another indication of low levels of immunity.

Recommendations

The RTAG endorsed the recommendations of the Horn of Africa TAG, particularly its call to seize the opportunity of every immunization activity to give OPV to boost the population immunity profile. The RTAG made the following additional recommendations.

1. Continue every possible effort to reach children in the south/central zone of Somalia during NIDs and child health days as well as at any window of opportunity and give OPV to boost their immunity.
2. Implement at least two NIDs using tOPV every year giving special attention to infants, in addition to using other childhood interventions such as child health days to give tOPV.
3. Continue to maintain certification standard surveillance, revitalize active surveillance and address issues that need strengthening as evidenced during the desk review conducted in June 2010.
4. Continue and further strengthen communication with community leaders and with all partners including nongovernmental organizations.

5.2 Sudan (North)

Dr Salah Haithami, WHO Sudan

Sudan has international borders with 5 countries. Due to the civil/armed conflict, many people have been displaced internally and also to neighbouring countries, especially Chad. The population movement between Sudan and Chad is huge and caused repeated wild poliovirus importations since last indigenous poliovirus in 2001. In spite of lack of security in Darfur resulted in deaths among polio volunteers and personnel during the immunization campaigns, polio eradication activities continued successfully in Sudan.

Since the last RTAG meeting in July 2009, AFP surveillance performance indicators have been maintained at the certification standard level. The non-polio AFP rate is maintained above 2 per 100 000 population under 15 years of age and adequate specimen collection rate above 95% for the past 5 years. All states reported an AFP rate of 2 or more; however, a few gaps were identified at subnational level in some states. Focused actions were taken by the programme to rectify these gaps. Sudan reported 5 confirmed polio cases (WPV1) in 2009. Genomic sequencing indicated a link with the poliovirus circulating in south Sudan.

The routine immunization coverage of OPV3 dose among infants increased from 79% in 2006 to 91% in 2009. In the Darfur states OPV3 coverage rate reached 80% as a result of several accelerated routine immunization activities.

Supplementary immunization activities were increased in response to the 2009 polio cases. Five NIDs rounds and two SNIDs rounds were conducted in 2009. The coverage by finger marking post-campaign monitoring of these campaigns was over 95%.

Two NIDs were conducted in 2010, one with bOPV and the other with tOPV, and two more supplementary immunization activities are planned for November and December. Monitoring through finger marking showed more than 95% coverage of target children. The main reason for missing children was absent children; only 10% were missed due to unavailable teams.

The strategic plan for 2011 includes the following elements.

1. Sustaining national commitment for polio eradication.
2. Maintaining surveillance standards through refresher training and better documentation of stool sample transfer. Efforts will be made to ensure adequate collection of stool samples from insecure areas through better coordination of nongovernmental organizations.
3. Maintaining high levels of population immunity through promoting immunization, especially in high-risk areas, and sustaining outreach immunization activities. It is planned to conduct 4 NIDs; 2 early and 2 late in 2011.
4. Continuing cross-border coordination. Major efforts are needed to ensure adequate external funding to sustain routine EPI beyond 2011, particularly with the threat of cessation of GAVI funds.

Discussions and conclusions

- The RTAG noted with satisfaction that the programme has established a comprehensive EPI system with recorded routine OPV3 coverage in 2010 of more than 90%.
- Sudan continued to be subjected to importation of wild polioviruses: in 2005, WPV1 was imported from Chad; in 2007, WPV1 was also imported from Chad; in 2008, WPV3 also from Chad. In 2009, WPV1 was imported from the south.
- Response to imported virus has been prompt, appropriate and extensive. It apparently stopped WPV transmission after importations. With a sound AFP system in place and with no detected WPV for 14 months, it is reasonable to assume that north Sudan is free of WPV transmission.
- High risk areas exist, mostly with poor security in parts of Darfur and along borders with countries with WPV transmission.
- AFP surveillance is maintained at certification standard with non-polio AFP rate reaching around 3 per 100 000 children in 2009 and 2010. This rate was more than 2 per 100 000 in each state. The stool adequacy is over 90% and with NPEV over 10%, denoting an effective reverse cold chain system and capability of the system to detect WPV importations.
- Potential withdrawal of GAVI funding for routine EPI beyond 2011 could seriously threaten immunization services, especially outreach which constitutes 60% of provided immunization.
- There is some concern about the political environment beyond the referendum planned for January 2011. It is foreseeable that this might potentially lead to large-scale population movements.

Recommendations

The RTAG endorsed the recommendations of the Horn of Africa TAG concerning Sudan and emphasized the following actions.

1. Prepare a contingency plan to ensure effective services, should high security risk areas or political unrest lead to community problems.
2. Give special emphasis to immunizing children under one year of age, including during training of vaccinators. As well, it is essential to ensure that supplementary immunization activities monitoring provides age specific data on immunization coverage.
3. Continue to maintain high levels of AFP surveillance and give special attention to high-risk areas, particularly Darfur. Make a special effort to collect stool samples from AFP cases in Darfur.
4. Continue to synchronize activities with neighbouring countries.
5. Prepare a financial plan to guarantee the quality and continuation of EPI beyond 2011.

5.3 Sudan (South)

Dr Yehia Mostafa, WHO south Sudan

South Sudan has not reported any polio cases for nearly 16 months after the epidemic that started in mid 2008 and continued for nearly 12 months. Wild poliovirus circulation seems to be interrupted; however, the situation is still very fragile both internally and in relation to the possibility of importation from neighbouring infected countries.

Nineteen supplementary immunization activities have been conducted since 2008, out of which; two were conducted in 2010 (February and March). More than 20 000 volunteers and health workers implemented those campaigns using house to house strategy. Despite improvement in the community immunity profile as reflected in the increase in the proportion of protected children among AFP cases and their contacts to nearly 80%, the profile still reflects the severe weakness of the routine immunization. Also, in-depth analysis shows that although the overall campaign coverage has reached 90% by finger marking as assessed by independent monitors, six states did not achieve this coverage in one or both of the last two rounds.

Analysis of the causes of missing children during campaigns shows that for 35% of missed children, no team visited them. This will require significant improvement in the supervisory process. To address this situation, the base of vaccinator supervisors is being extended by including the IDSR surveillance officers. Tailored training courses for vaccinators and supervisors are planned to be implemented.

Several activities, initiated and conducted in 2010, led to significant improvement in the performance of the AFP surveillance. These included establishing an AFP surveillance cell, recruiting a senior surveillance officer, introducing active AFP case searching, daily feedback (reminders), regular reviews every three months, repeated training workshops, establishing an incentive system for reporting, updating the guidelines and introducing the stool samples survey among "healthy children" in silent and isolated counties. The programme was provided with significant resources. Among the human resources, more international and STOP teams were recruited and also nationals. Logistics support provided included cars, bicycles, motorbikes, computers, printers and photocopiers). As a result the reporting of AFP cases has more than doubled achieving a non polio AFP rate of more than 4 per 100 000, 97% stool adequacy rate and >10% NPEV rate. Despite this improvement, there are still weaknesses as regards the timeliness of stool samples transportation, data completeness and documentation.

In 2006, the routine immunization coverage rate was only 19%. It increased to 22% in 2008. This rate nearly doubled (43%) in 2009, as a result of a number of actions initiated, namely the elaboration of an EPI policy, revival of ICC meetings and implementation of the RED approach. For further improvement, a number of approaches are being pursued, including completing EPI monitoring, implementing 2010 Vaccination Week (April–May 2010), conducting EPI reviews (May 2010), data and cold chain management training (May, June 2010), supporting ACCSI activities and acceleration activities and the conduct of state-level EPI micro-plans for 2011.

To maintain developments and move towards achieving the targets of the 2010–2012 strategic plan, the programme emphasizes the need to:

- Maintain the current level of staffing, international and national, and also CDC STOP Team consultancy support.
- Address identified gaps in the AFP surveillance system.
- Maintain the current level of supplementary immunization activities using tOPV vaccine.
- Improve the routine vaccination to reach DPT3 coverage >70%
- Improve communication and cooperation with different levels and organizations in the community.

Discussions and conclusions

The RTAG, having discussed the data provided, made the following conclusions.

- South Sudan has detected no WPV since June 2009 (16 months) and data suggest that WPV transmission may have been interrupted. However, the risk of importation remains very high, particularly as wild polioviruses are circulating in some countries neighbouring south Sudan.
- There is a major discrepancy between the census population figures (under 5 and under 15) and the figures determined through operational activities, which casts doubt on reported AFP rates as well as immunization coverage rates.
- While generally reported immunization coverage is high and community compliance have been secured, 5 of the 10 states of south Sudan report more than 10% of children missed during these campaigns, with 30%–40% of missed children the result of the team failing to appear and vaccinate.
- The immunity profile of non-polio AFP cases shows that 20% of children are incompletely protected. The profile is most concerning in Eastern Equatoria.
- There is concern about the prevailing political environment which may lead to large-scale population movement and possible disruption of activities.
- The strategic plan includes the following:
 - Continuing the progress towards comprehensive AFP surveillance and routine immunization
 - Guaranteeing of funding beyond 2011
 - Continuing campaigns through 2011
 - Better assessment of the size of the target populations for campaigns and surveillance.

Recommendations

The RTAG endorsed the recommendations of the Horn of Africa TAG concerning south Sudan and recommended that a sound phased programme of action be prepared for 2011 focusing on the following.

1. Maintain and further develop the present AFP surveillance system, especially in high-risk areas, and improve stool sample transfer from remote areas
2. For supplementary immunization activities, direct special emphasis to children below one year during planning, training and monitoring
3. Prepare a contingency plan should any instability follow the January referendum
4. Better quantify the target population in order to avoid being misled by falsely high figures based on incorrect denominators
5. Establish financial plan to guarantee operational continuity for the next 3–4 years, involving the reliable development of routine services
6. Synchronize services among countries bordering south Sudan.

6. RECOMMENDATIONS OF THE HORN OF AFRICA TECHNICAL ADVISORY GROUP

Dr Faten Kamel, WHO EMRO

The Horn of Africa TAG (HOA/TAG) met in March 2010 and noted the progress and achievements made by the countries in surveillance and supplementary immunization activities. However, although the last detection of wild poliovirus was in July 2009, the TAG expressed concern that WPV transmission might still be occurring undetected, since significant immunity gaps and suboptimal AFP surveillance performance remain in high-risk areas in most countries. These areas are also at risk for spread of wild poliovirus in the event of importation from areas with active transmission such as Chad. The TAG noted that in south Sudan, progress has recently been made in strengthening programme capacity through increased technical and logistical support, but there still remain gaps in supplementary immunization activities quality and AFP surveillance performance.

The HOA/TAG made some cross-cutting recommendations for all countries, including need to continue using all opportunities to provide OPV to children, and implementing proper independent monitoring for all supplementary immunization activities conducted with timely reporting of the results and documentation of corrective actions. Countries were called on to develop specific strategies to address the unique challenges to reaching and fully vaccinating mobile populations. The engagement of community leaders in micro-planning, implementation of supplementary immunization activities in high-risk areas and the use of culturally appropriate strategies were stressed.

The HOA/TAG recommended that all countries should implement desk reviews of subnational AFP surveillance performance on a quarterly basis. It recommended all countries to conduct detailed epidemiological and clinical investigation of VDPV cases with appropriate outbreak response for cVDPVs. Countries were also requested to update their outbreak preparedness and response plans ensure full implementation of these plans.

While HOA/TAG made it clear that over the next few years, supplementary immunization activities remain the priority strategy for interruption of wild poliovirus transmission in the Horn of Africa countries, it urged that at least for the next 2 years, polio staff should systematically support all efforts to strengthen routine immunization activities in

high-risk areas, including supporting implementation of the RED approach and capacity building.

In its specific recommendations to south Sudan, the HOA/TAG recommended enhancing AFP surveillance activities with active case searching and supplementary collection of stool samples from a sample of healthy children in silent areas, in addition to collection of samples from contacts of AFP cases. Validation of at least a quarter of the cases by international staff and conducting international field review were also recommended.

The HOA/TAG recommended four full NIDs in 2010 with efforts to improve campaign quality and continuation of intense international technical support.

For north Sudan, the HOA/TAG recommended intensification of active surveillance starting with the highest risk areas as identified in the risk analysis reports, validation of AFP cases and regular surveillance reviews. Recognizing the continued risk of importation from Chad, the HOA/TAG recommended two nationwide supplementary immunization rounds with special attention to the high-risk border areas.

The HOA/TAG recognized the difficult security and access circumstances in Somalia and that it has been polio-free since March 2007 while maintaining good AFP surveillance indicators. It recommended maintaining the population immunity and the implementation of two NIDs in 2010 using tOPV. It also recommended that all opportunities for childhood interventions continue to be used to boost population immunity profile to WPV by providing tOPV to children under 5 years during child health days.

Djibouti and Yemen were requested to maintain adequate immunity through routine EPI and resource permitting, two rounds of supplementary immunization activities every year, and to sustain high quality surveillance throughout the countries especially in bordering and hard-to-reach areas.

7. RISK ANALYSIS FOR POLIO-FREE COUNTRIES

Dr Ann Buff, WHO EMRO

Following the successful experience of WHO European Regional Certification Commission for the Assessment of Risk of Substantial Transmission Following Importation of Wild Poliovirus, the Regional Office undertook a similar exercise with the goal of developing a quantitative tool to enable national polio eradication programmes to analyse the risk of a poliovirus outbreak in the event of importation and identify areas for improvement. In addition, the risk analysis was envisioned as a tool to help inform country and regional decision-making processes with respect to prioritizing activities and funding requests. Countries with endemic poliovirus were excluded from the analysis.

Three areas were addressed in the risk analysis including AFP surveillance, population immunity and other factors such as health system strength. In each of the three areas, both national and subnational indicators, either measured by the national polio programme (e.g. AFP case rate) or reported to WHO (e.g. percentage of districts with $\geq 80\%$ coverage for

OPV3) were selected for inclusion. Countries were scored on a total of 16 indicators and both aggregate and area-specific (surveillance, immunity, other factors) results were calculated.

Although the adopted methodology has not been finalized, the results of the preliminary risk analysis were not unexpected. Countries with the largest population immunity gaps and weakest routine immunization programmes were also the countries at highest risk of a poliovirus outbreak in the event of an importation. The view of the RTAG on the methodology and model is being sought and will be finalized with modifications and shared with national programmes.

In the discussion that followed, the RTAG affirmed the usefulness of the risk analysis approach and that it should be further developed. It highlighted that the output of the model indicates that it requires a new look and probably reviewing the weighting of the various inputs. A key indicator in this regard would be to see that the output is near to the non-model assessment based on past experience observed over the years in individual countries in the Region.

8. VDPV REGIONAL EXPERIENCE AND GUIDELINES

Dr Faten Kamel, WHO EMRO

VDPVs are divided into:

- Immunodeficiency-associated VDPVs (iVDPVs), isolated from persons with primary immunodeficiencies who usually have prolonged VDPV infections following exposure to OPV (i.e. cannot 'clear' the OPV infection);
- Circulating VDPVs (cVDPVs), which are associated with sustained person-to-person transmission and can cause outbreak; and
- Ambiguous VDPVs (aVDPVs), which are VDPV that cannot be easily defined as either iVDPVs or cVDPVs are labelled as ambiguous.

During the past 5 years, 14 cases of iVDPV have been reported from 10 countries in the Region; most of the cases were caused by type 2 virus, with age ranging between 4 and 44 months. All had multiple OPV doses (>3). These single cases had neither further circulation nor chronic excretions. Virus was as well isolated from contacts of some cases (Egypt, Morocco and Yemen).

VDPVs were detected through the environmental surveillance system in Egypt 4 times over the years and were classified as aVDPVs

Globally since 2001, cVDPVs have been found to cause 16 polio outbreaks (≥ 2 cases) reported and investigated in 15 countries including Afghanistan and Somalia. Somalia reported 2 cases in 2008, 7 in 2009 and 2 in 2010. VDPV occurrence and circulation in Somalia demonstrates the fragility of the ground for WPV circulation. While the scheduled immunization activities (2 rounds of NIDs and 2 rounds of child health days per year) appear adequate to maintain the immunity profile at sufficient level, cVDPVs occurred in areas with low routine coverage and poor access. However, AFP surveillance remains sensitive enough

to detect VDPV circulation. Extremely long delays in the notification of VDPVs to the country hampered timely response; however, timeliness improved greatly in 2010. Persistent inaccessibility in some districts continue to pose challenges to VDPV response (Lower Shabelle)

Five cVDPV cases were reported in Afghanistan (2 in 2009 and 3 in 2010) from 3 neighbouring districts in southern region, the same areas of persistent wild virus circulation. These areas have suboptimal immunity due to insecurity and poor access, poor routine immunization and gaps in the quality of supplementary immunization activities.

Isolation of VDPV should be followed by exhaustive clinical and epidemiological investigation, with assessment of immune status of the case, search for more cases, contact sampling and evaluation of immunization coverage in the area in order to determine the type of VDPV. The detection of an outbreak of poliomyelitis, *of any origin*, should be considered a public health emergency in any country that is non-endemic or recently endemic, or in any area of an endemic country that is largely polio-free and should be followed by appropriate immunization response.

During discussions, it was indicated that there are recent developments in the laboratory procedures that would allow rapid identification and labelling of viruses isolated as VDPV. It was also indicated that for type 2 viruses, a change in 6 nucleotides make it reportable. The need to continue to maintain high population immunity as long as OPV is used was emphasized to avoid the appearance of VDPVs.

Annex 1

PROGRAMME

Thursday, 21 October 2010

08:00–08:30	Registration	
08:30–09:00	Opening session	
	Opening remarks of the Chairman	Chairman of Regional TAG
	Address by Dr Hussein A. Gezairy, Regional Director, WHO/EMRO	
	Follow-up on the implementation of the recommendations of the 7th RTAG meeting	Dr E. Mohsni, WHO/EMRO
09:00–10:00	Progress towards polio eradication	
	Regional overview	Dr T. Mir, WHO/EMRO
	Global overview	Mr C. Maher, WHO/HQ
	Discussion	
	<i>Epidemiological situation in polio endemic countries, challenges and future plans: Pakistan</i>	
10:30–11:15	Epidemiological situation	Dr N. Abid, WHO Pakistan
11:15–12:00	Issues and initiatives in endemic and high risk areas	Dr A. Bosan, Pakistan
12:00–12:45	Surveillance quality	Dr O. Islam, WHO Pakistan
13:45–14:15	Campaign quality	Dr A. Bosan, Pakistan
14:15–14:30	Impact of floods on polio eradication and actions taken	Dr N. Abid, WHO Pakistan
15:00–15:30	Communication activities	Dr A. Raza, UNICEF Pakistan
15:30–15:50	Cross-border coordination between Pakistan and Afghanistan	Dr N. Abid, WHO Pakistan
15:50–16:30	Overall discussion on Pakistan	
16:30–17:30	Closed meeting of the RTAG	

Friday, 22 October 2010

08:00–09:15	<i>Country-specific overviews: Sudan (North and South)</i>	
	Epidemiological situation	Dr S. Haithami, WHO Sudan
	Status of the eradication strategies	Dr Y. Mostafa, WHO south Sudan
	Plans to maintain polio free status	
	<i>Epidemiological situation in polio endemic countries, challenges and future plans: Afghanistan</i>	
09:15–10:00	Epidemiological situation	Dr A. Quddus, WHO Afghanistan

10:30–11:15	Issues and initiatives in the South	Dr A. Quddus, WHO Afghanistan
11:15–12:00	Surveillance quality	Dr A. Quddus, WHO Afghanistan
13:45–14:30	Campaign quality	Dr A. Dost, Afghanistan
14:30–15:15	Communication activities	Dr N. Kakar, Afghanistan
15:30–16:30	Overall discussion on Afghanistan	
16:30–17:30	Closed meeting of the RTAG	

Saturday, 23 October 2010

08:30–09:00	<i>Country-specific overviews: Somalia</i> Epidemiological situation Status of the eradication strategies Plans to maintain polio free status	Dr A. Mulugeta, WHO Somalia
09:00–09:15	Recommendations of the Horn of Africa TAG	Dr F. Kamel, WHO/EMRO
09:15–09:45	Risk analysis for polio free countries	Dr A. Buff, WHO/EMRO
09:45–10:15	VDPV regional experience and guidelines	Dr F. Kamel, WHO/EMRO
10:45–12:45	Closed meeting of the RTAG	
12:45–13:45	Presentation of RTAG recommendations	
13:45	Closing session	

Annex 2

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