

# Objective 1: Poliovirus detection and interruption

| POLIOVIRUS DETECTION AND INTERRUPTION   |  |   |
|---|--|---|
| Main Objectives   | Outcome Indicators                                   | Major Activities  |
| <b>Complete the interruption of wild poliovirus transmission globally and more rapidly detect and interrupt any new outbreaks due to vaccine-derived polioviruses</b> | All wild poliovirus transmission stopped by end-2014 | 1. Strengthen global surveillance<br>2. Maintain an appropriate SIA schedule<br>3. Enhance OPV campaign quality |
|   | All new cVDPV outbreaks stopped within 120 days      | 4. Enhance the safety of OPV operations<br>5. Prevent and respond to polio outbreaks                            |
| Monitored by the IMB  |  |   |

## 5.1 INTRODUCTION

5.1 The *GPEI Strategic Plan 2010-2012* saw a number of breakthroughs. The intense focus on interrupting transmission led to success in India – widely considered the country with the most technically challenging conditions for interrupting poliovirus transmission in the world. The 2010-2012 Plan also resulted in the lowest ever number of outbreaks caused by importations into polio-free areas and the interruption of transmission in two of the countries in which transmission had been re-established (i.e. Angola and the Democratic Republic of the Congo).

5.2 The launch of the *Global Polio Emergency Action Plan* in May 2012 put the programme on an emergency footing to overcome the challenges in the remaining three endemic countries and vigorously protect polio-free areas. By the end of 2012, the GPEI reported the lowest number of cases ever globally, in the fewest number of countries. Major gains were made towards overcoming the chronic challenges to interrupting transmission in the remaining endemic countries. However, in some of the key reservoir areas, new, emerging risks were threatening these gains, particularly attacks that caused the death of polio workers in Pakistan and Nigeria, requiring new approaches to ensure the safety of workers while addressing the underlying issues that contributed to these attacks.

**Interruption of WPV transmission requires rapid detection of all poliovirus transmission (WPV and VDPV) anywhere in the world, overcoming the obstacles to reaching all children with OPV in the three remaining endemic countries, and protecting areas prone to outbreaks and reimportation.**

## 5.2 THE GOAL

5.3 With Objective 1, the GPEI aims to take advantage of the breakthroughs, to complete the interruption of WPV transmission globally and to more rapidly detect and interrupt any new outbreaks due to VDPV. The key working targets on the path to this objective are to achieve the interruption of WPV 1 by the end of 2014, and to stop all new outbreaks due to cVDPVs within 120 days of an index case.

## 5.3 WHAT IS REQUIRED TO INTERRUPT TRANSMISSION?

5.4 Interruption of WPV transmission requires rapid detection of all poliovirus transmission (WPV and VDPV) anywhere in the world, overcoming the obstacles to reaching all children

with OPV in the three remaining endemic countries, and protecting areas prone to outbreaks and reimportation by maintaining immunity levels above the thresholds needed to interrupt transmission and by rapidly responding to any new outbreaks.

### 5.4 WHAT WILL BE DONE?

#### Major activities

1. Strengthening global surveillance to detect virus circulation
2. Maintaining an appropriate supplementary OPV immunization schedule
3. Enhancing OPV campaign quality to interrupt endemic transmission
4. Enhancing the safety of OPV campaign operations in insecure areas
5. Preventing and responding to polio outbreaks

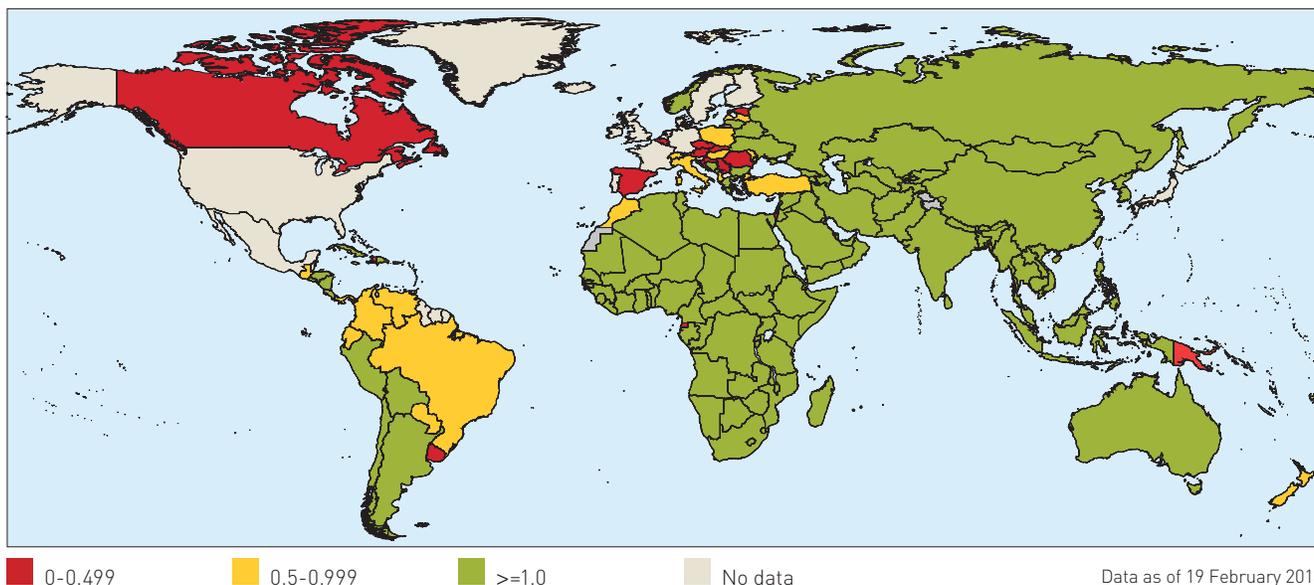
Sensitive surveillance is vital for the programme to rapidly detect all circulating poliovirus and to guide eradication activities.

#### Activity 1: Strengthening global surveillance to detect virus circulation

5.5 Global surveillance for poliovirus is fundamental to achieving and sustaining global polio eradication. Sensitive surveillance is vital for the programme to rapidly detect all circulating poliovirus and to guide eradication activities. Acute flaccid paralysis (AFP)

surveillance (Figure 10) will remain the primary mechanism for the detection of poliovirus, with emphasis on endemic and high-risk countries. In addition, environmental surveillance will be further scaled up as a complement to AFP surveillance for detecting the presence of poliovirus in infected areas and populations. This will facilitate the more rapid identification of outbreaks in high-risk areas, provide additional information to validate the interruption of transmission and help document the elimination of vaccine-related strains after OPV cessation.

Figure 10: Global acute flaccid paralysis disease surveillance performance, 2012



### Acute flaccid paralysis surveillance

5.6 For the three regions not certified polio-free at the end of 2012, the priority will be to close remaining gaps in AFP surveillance. Based on the global epidemiology of polio in mid-2012, the areas of greatest initial focus will be northern Nigeria, the Federally Administered Tribal Areas/Khyber Pakhtunkhwa (FATA/KP) Pakistan, southern Afghanistan and, potentially, bordering areas of neighbouring countries, which regularly become reinfected due to population movements and poor routine immunization coverage (such as the countries bordering Lake Chad and west African countries bordering Nigeria). These areas will require particularly intensive AFP and possibly supplementary surveillance activities to detect and respond to any residual transmission.

5.7 In these areas, particular attention will be given to ensuring documented, active (at least monthly) AFP surveillance at all major reporting sites. As hospital involvement is critical to sensitive surveillance, the review of AFP surveillance procedures at major hospitals in risk areas is ongoing, with a schedule of regular refresher trainings for staff at these establishments. In areas where performance is suboptimal, the focus will be on staff training, the institution of appropriate management and accountability structures, and in-depth analysis of surveillance data. In addition, the GPEI is working to institutionalize systems for modifying surveillance networks through the tracking of health-care providers visited by AFP cases and updating reporting networks as needed.

5.8 Special efforts will also be made to track AFP sensitivity in marginalized and at-risk populations. For example, in Pakistan, health-care providers for Pashtun, migrant and nomadic groups will be specifically identified and incorporated into the surveillance reporting and informant networks. The focus will also be on expanding networks of community informants to supplement these more official channels and, potentially, establishing rewards for polio-confirmed AFP cases. Finally, where orphan viruses are detected, an investigation will be conducted and surveillance procedures will be reviewed, as appropriate.

5.9 In areas at particular risk of missed transmission, in addition to the above, targeted AFP community searches, six-monthly active case searches and case searches during vaccination campaigns will be conducted to complement existing AFP surveillance activities. Regional and national plans will elaborate specific activities and budgets, based on quarterly regional risk assessments.

5.10 In polio-free countries, regular risk analyses (quarterly for those regions not yet certified as polio-free, and six-monthly for the three certified regions) will identify areas of suboptimal surveillance for targeted corrective actions. For the three regions that are certified polio-free – the Americas, Europe and the Western Pacific – the priority will be to sustain AFP surveillance at certification standard.<sup>17</sup>

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<sup>17</sup> Certification-standard performance is defined as the achievement of a non-polio AFP rate of at least one non-polio AFP case per 100 000 population aged <15 years, with adequate stool specimens collected from at least 80% of cases. Specimens are defined as “adequate” if two specimens are collected within 14 days of onset of paralysis, at least 24 hours apart, arriving in the laboratory in good condition. All specimens must be analysed in a laboratory accredited by WHO.

In endemic and at-risk countries, an even higher standard will continue to be applied. A similar principle will operate for those countries that have been polio-free for several years in regions that have not yet been certified. This will be achieved through mobilizing heightened political commitment to the goals of the polio endgame, allocating additional resources where needed – including for laboratory capacity – and increasing WHO regional office support to countries to revitalize AFP surveillance. Oversight of surveillance quality will be reinforced by Regional Certification Commissions (RCCs).

### Environmental surveillance

5.11 The systematic sampling of sewage for polioviruses currently occurs in dozens of locations across four countries as part of the GPEI. This environmental surveillance will be

**Environmental surveillance will be geographically expanded to help identify any residual transmission in endemic areas, to provide early indication of new importations into recurrently reinfected areas, and to document the elimination of Sabin viruses following the tOPV-bOPV switch and eventual**

geographically expanded to help identify any residual transmission in endemic areas, to provide early indication of new importations into recurrently reinfected areas, and to document the elimination of Sabin viruses following the tOPV-bOPV switch and eventual bOPV cessation. This is planned to include sites in Afghanistan, Nigeria and high-risk areas and routes for importation as well as selected areas where OPV cessation must be monitored particularly closely due to a history of cVDPV emergence, or the presence of a national OPV production facility. Consequently, at least 15-20 additional sampling sites will be added by the end of 2015.

### Special surveillance

5.12 AFP and environmental surveillance will be complemented by special surveillance studies where needed with four specific approaches. First, there will be expanded use of serological surveys, on at least an annual basis, to more rapidly assess and validate population immunity levels, stratified by age group, in any areas with persistent poliovirus transmission. Second, large-scale stool surveys and expanded contact sampling, particularly from all inadequately-sampled AFP cases, will be used to more rapidly rule out ongoing poliovirus transmission in recently reinfected and/or endemic areas that are no longer reporting polio cases. Third, special studies will be scaled up among patients with primary immunodeficiency syndromes to more systematically detect immunodeficiency-associated vaccine-derived polioviruses (iVDPVs) in both industrialized and middle-income countries. Finally, special environmental surveillance studies will be conducted for species C enteroviruses in areas with recurrent cVDPV emergences and/or risk factors for cVDPV emergence.

### Activity 2: Maintaining an appropriate supplementary OPV immunization schedule

5.13 SIAs are, along with AFP surveillance and routine immunization, a fundamental part of the overall strategy for polio eradication. SIAs are essential for simultaneously boosting both the humoral and intestinal immunity of infected populations to interrupt virus transmission and to maintain population immunity above the threshold for reinfection in high-risk polio-free areas. SIAs can also reduce the risk of cVDPV emergence and spread in areas at risk. Planned SIAs that are conducted on a national or subnational basis are typically



UNICEF/Arif Ali

Giving children the ability to fight off the poliovirus means maintaining high population immunity through strong immunization systems, routine activities as well as a schedule of campaigns.

referred to as National or Subnational Immunization Days (NIDs or SNIDs). House-to-house mop-up campaigns, outbreak response campaigns and Short Interval Addition Dose (SIAD) activities are all types of SIAs.

5.14 The planning of NIDs and SNIDs is guided by a combination of risk assessments and epidemiology. The need for these SIAs in different areas will vary by risk and programme objectives. In 2013-2014, polio-endemic areas of Afghanistan, Nigeria and Pakistan will require the most intensive schedules of NIDs and SNIDs to rapidly build the immunity needed to interrupt transmission. In areas at highest risk of recurrent importation from these endemic areas, particularly in west and central Africa, the objective of the continued NIDs/SNIDs during this period is to mitigate the potential for an outbreak following a WPV reintroduction. Finally, in areas with a history of cVDPVs, such as Somalia, SIAs will be conducted to reduce the conditions favouring VDPV emergence and spread. Table 4 and Figure 11 illustrate the planned SIA schedules for these settings. The specific SIA plans for the entire 2013-2018 period are available in the document entitled *GPEI Financial Resource Requirements 2013-2018*.

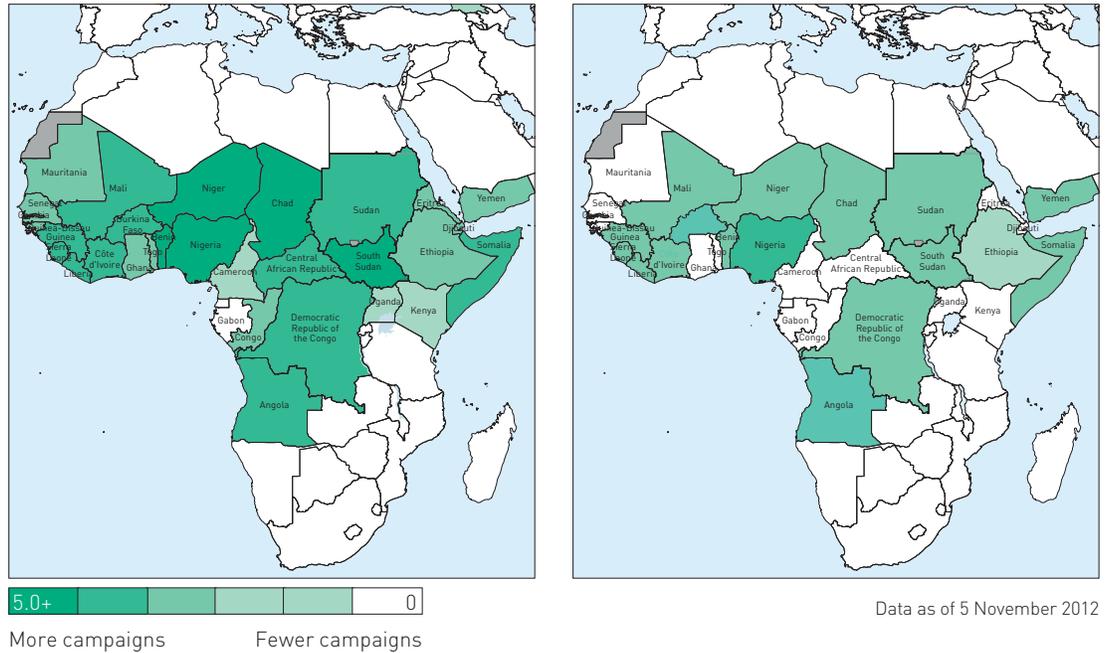
**bOPV cessation**

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**Table 4: Planning framework for OPV campaign schedules**

| Country Status/Risks                | Country/Area (examples)   | Annual SIA Rounds 2013-2018 |
|-------------------------------------|---|-----------------------------|
| <b>Polio endemic</b>                | Northern Nigeria, Pakistan, southern Afghanistan                            | 6-8                         |
| <b>Recurrent polio importations</b> | West Africa, Chad, Sudan, South Sudan                                       | 2-4                         |
| <b>Reccurent cVDPV emergence</b>    | Northern India, Somalia, Ethiopia, eastern Democratic Republic of the Congo | 2-4                         |

Figure 11: Indicative OPV campaign plans in Africa, 2013-2018



**Activity 3: Enhancing OPV campaign quality to interrupt endemic transmission**

5.15 Interrupting polio transmission requires that population immunity reach a level where poliovirus is unable to find sufficient numbers of susceptible individuals to sustain transmission. This has been achieved in all but the three remaining polio-endemic countries of the world. Even in these countries, the virus only persists in populations on the margins of society, in areas where health services are largely non-existent and oversight and management are weakest. Routine immunization coverage in these areas is low and repeated SIAs have fallen short of reaching enough children a sufficient number of times with OPV. To achieve interruption of poliovirus transmission in these settings, SIA and immunization management and quality will be enhanced.

**Seven major areas of focus for improving SIA quality:**

- Microplanning
- Vaccination worker selection and support
- Community engagement
- Effective monitoring
- Surge support
- Technical innovations
- Operational tactics

**Enhancing SIA management and quality**

5.16 Overcoming the challenges in these last pockets of poliovirus transmission requires that the full experience and strength of national governments, local leaders and their GPEI partners be brought to bear on these areas. The lessons learnt from successes in other challenging settings, coupled with a commitment to innovative local problem solving, are essential for success. Particular emphasis and attention are needed in the seven major areas outlined in the following section. For each of the remaining endemic countries, further details on the application of these approaches are available in Annex A.

## Microplanning

5.17 The local microplan is the blueprint that maps out all the necessary components – the houses, the vaccination teams and their daily tasks, key influencers, social mobilizers, timings and logistics – for ensuring vaccinators reach all children with OPV. Incomplete and poor-quality microplans in these polio persistent areas are one of the primary reasons for poor campaign quality and accountability. Despite years of campaigns and guidance, microplans are still grossly inadequate in some areas in each of the remaining endemic countries. However, serious efforts are now under way to correct this root problem.

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5.18 In Nigeria, the programme introduced house-based microplans for the first time in 2012, heavily informed by the success in areas of India that overcame similar issues with missed areas and missed populations. The development of house-based microplans requires a physical walk-through of all areas by local leaders and supervisors to determine daily vaccinator work areas by enumerated households. These microplans are tightly linked with vaccinator tally sheets, capturing the teams' work by household and allowing cross verification. This is in contrast to previous microplans that simply named an area, established an estimated number of children that the team should cover and allowed the teams to simply record tallies of their achievements, making it difficult to hold them accountable for missed children or areas.

5.19 In Afghanistan, microplans are being improved further in volatile Southern Region to define how much accessibility the programme has in each area and to identify individuals or groups who have access. The approach is guided by the principle that all populated areas are accessible to someone. These community-based, access-enhanced microplans allow the programme to identify exactly which type of person is acceptable in each context to guide planning and ensure that trusted faces are presented at each doorway. In Pakistan, the targeted violence against health workers in late 2012 has required more extreme modifications to microplanning. Health-worker safety has become paramount and assessments of local law enforcement and security officials now form an integral part of the local microplans.

**At the heart of the polio eradication programme globally are the front-line workers who ensure that polio vaccines reach every child**

5.20 In all three endemic countries, the microplans are being expanded to ensure the integration of social mobilization activities, including details of local influencers, and to more effectively reach children outside of households. More robust, monitored plans are being developed for teams at marketplaces and major transit points, incorporating the detailed mapping of nomadic groups and their traditional routes of travel and temporary settlement areas. New technology is also being used in some areas to enhance campaign microplanning through digital mapping to validate and refine the plans and to identify missed areas.

## Front-line vaccination workers

5.21 At the heart of the polio eradication programme globally are the front-line workers who ensure that polio vaccines reach every child. When vaccinators and supervisors with the right profiles are recruited, trained and supported through effective supervision, even the most difficult areas achieve very high coverage. In the areas where the virus continues to circulate,

one inevitably finds weaknesses in this aspect of the programme. The situation is no different in the persistent poliovirus transmission areas of Afghanistan, Nigeria and Pakistan. In recognition of the importance of these front-line workers, many of whom put themselves at personal risk, all three countries raised the daily wage rates for vaccinators in 2012.

5.22 A major emphasis in each of the remaining endemic countries will be to establish vaccinator selection committees with local membership and find workers who are both acceptable to the local community and as accountable as possible to local authorities. Standards for team composition will be disseminated and tracked to ensure that teams have the right mix of members who are acceptable to local communities, can enter households to find all available children and can be held accountable for their performance.

**Maintaining trained and motivated on-the-ground staff who understand the community dynamics, speak the local language and are socially acceptable to deliver OPV and interact with mothers is key to success.**

5.23 These programmes will also seek to retain a higher proportion of vaccinators and to overhaul training procedures with a focus on interactive skill-based training wherein team members demonstrate their abilities before heading out to the field. Data from many countries, most recently Pakistan, show a strong correlation between caregiver satisfaction with team performance and vaccine acceptance; caregivers are more likely to refuse OPV when they are not satisfied with team performance. Maintaining trained and motivated on-the-ground staff who understand the community dynamics, speak

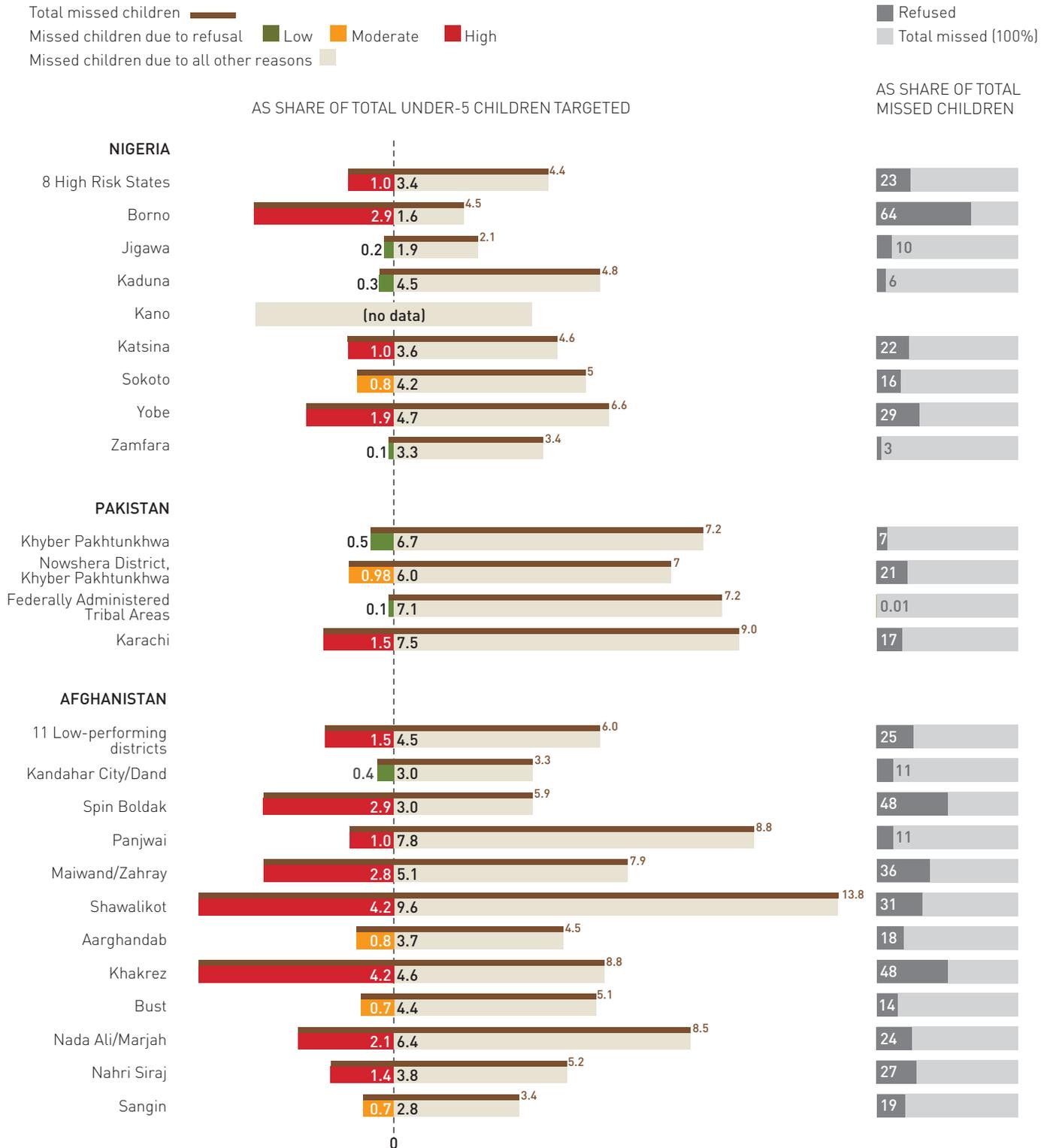
the local language and are socially acceptable to deliver OPV and interact with mothers is key to success. A new interpersonal communication skills kit is being produced and special training conducted in several high-risk areas of Nigeria and Pakistan to ensure vaccinators are able to present themselves to caregivers both courteously and professionally. In Afghanistan, a similar module was rolled out in select districts of Kandahar in the last quarter of 2012. The focus in the future will be to apply such strategies more broadly and consistently, especially through 2013-2014.



*At the heart of the polio eradication programme is the frontline worker who ensures that each and every targeted child in their catchment area is vaccinated.*

UNICEF 2011/Jawad Jalali

**Figure 12: Missed children due to refusal in global sanctuaries (%), March 2013**



Source: UNICEF Polio Communications Quarterly Report, May 2013, www.polioinfo.org.

Communication activities will be tailored to specific target audiences, with greater engagement with those individuals who can credibly deliver messages to those most sceptical of the programme.

### Social mobilization and community engagement

5.24 Experience throughout the GPEI has shown that poliovirus circulation stands little chance of surviving in fully mobilized communities, even in the most difficult contexts. Many countries have also demonstrated the importance of demand-generation for OPV to create local ownership. In the areas of persistent transmission in the three remaining endemic countries, both significant gaps and

real opportunities for generating demand for OPV exist. Securing the buy-in of the most marginalized and disaffected communities to accept OPV is particularly vital to complete polio eradication. Past strategies have proven successful, as demonstrated by decreasing vaccine avoidance in all country programmes (Figure 12). Looking ahead, the GPEI's major emphasis will be to focus communication and social mobilization activities to the specific social, cultural and political context of each infected area, with less of the larger global or national flavour of the campaign. Communication activities will be tailored to specific target audiences, with greater engagement with those individuals who can credibly deliver messages to those most sceptical of the programme.

5.25 Fundamental to improved acceptance of OPV is to understand the needs of communities through appropriate social research and to match those needs with the capacity of the programme to deliver them. This research may show that communities want additional health interventions, such as deworming tablets. Such findings will be analysed and, where feasible, systematically integrated into operational and financial planning. Equally, the social research may indicate basic infrastructure and service demands, such as sanitation or schooling. The GPEI will work with the government and relevant partners to supplement efforts to meet these needs according to the programme's capacities.

5.26 Social mobilization networks (Figure 13 and Table 5) have been scaled up in all remaining polio-endemic countries in 2012, with early data showing that, in communities where these volunteers are deployed, there are higher rates of campaign awareness, increased conversion of refusals and reduced numbers of missed children. These networks include two types of mobilizers: those who work at the household level, going door-to-door to engage and promote polio vaccination with parents and caregivers, and those who reach out to community and

religious leaders to seek their support for OPV campaigns. For the household level, mobilizers are trained and supported to recognize and address the concerns of communities, provide accurate information through locally appropriate channels and enable parents to make informed decisions. Interpersonal communication skill building is aimed at establishing trust with parents and caregivers to immunize their child with OPV every time it is offered. At the community level, influential local people such as imams, priests, village heads, school teachers, businesspeople and landowners are identified and engaged to act as key influencers at community meetings, make announcements in places of worship or go door-to-door to encourage resistant parents and caregivers to accept OPV. Such influencers are highly effective in creating a supportive and safe

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UNICEF 2012/L. Andriamasinoro

*Local mobilization efforts to build and maintain individual and community demand and trust for polio immunization is a critical factor for eradication.*

environment and in building confidence in the safety and efficacy of the vaccine.

5.27 From a message creation perspective, social data will be utilized to develop appropriate content, deliver information through credible sources and identify channels that reach all communities. Political advocacy and mass media will continue to play an important role, reinforcing local outreach. As endemic polio has now been restricted to communities with large and predominantly Muslim populations, a greater effort is under way to ensure the right mix of voices are in place to support eradication efforts. International and regional support will help ensure that advocacy plans and partnerships engage and enlist the help of such diverse and sometimes opposing groups as political parties, academics, and religious and cultural groups. Partnerships with a broad spectrum of religious and medical institutions are being rolled out and will be expanded in all polio priority areas through 2014.

**Figure 13: Scale up of social mobilization networks as share of target high-risk areas covered in priority countries, October 2011-April 2013**



Source: UNICEF Polio Communications Quarterly Report, May 2013, [www.polioinfo.org](http://www.polioinfo.org).

**Table 5: Social mobilization field workers in place, April 2013**

| Country                                 | Target<br>(number of people) | Mobilizers in place<br>(number of people) | Mobilizers in place<br>(share of target, %) |
|---|------------------------------|---|---|
| <b>Afghanistan</b>                      | 3,436                        | 3,436                                     | 100%  |
| <b>Democratic Republic of the Congo</b> | 18,688                       | 18,688                                    | 100%  |
| <b>India</b> Uttar Pradesh              | 5,634                        | 5,491                                     | 97%   |
| Bihar                                   | 1,353                        | 1,306                                     | 97%   |
| West Bengal <sup>a</sup>                | 1,320                        | 1,320                                     | 100%  |
| <b>Nigeria</b>                          | 2,600                        | 2,127                                     | 81.8%                                       |
| <b>Pakistan</b>                         | 1,182                        | 1,059                                     | 90%   |

<sup>a</sup> West Bengal mobilizers are deployed through NGOs.

Source: UNICEF Polio Communications Quarterly Report, May 2013, [www.polioinfo.org](http://www.polioinfo.org).

### Monitoring

5.28 In 2012, major gains were made in the monitoring of OPV campaign performance in the remaining endemic countries. A standard monitoring framework now covers the three phases of campaign activity – from planning to implementation to post-campaign assessment. Technological advances in data transmission over mobile networks have helped these countries to improve the timeliness of their information flows. All three countries have established emergency operation centres at the national and critical subnational levels to review standardized

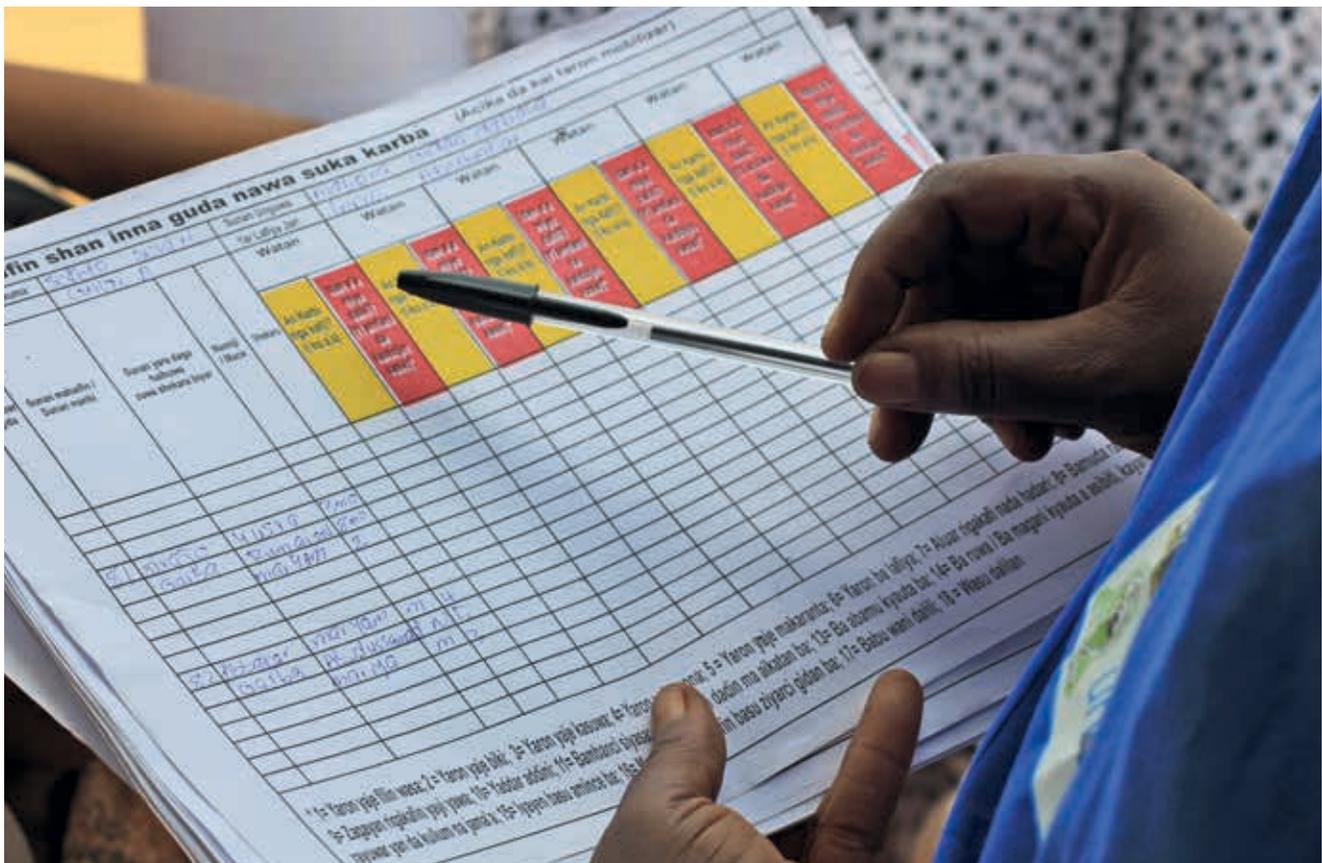
**In the remaining endemic countries a standard monitoring framework now covers the three phases of campaign activity – from planning to implementation to post-campaign assessment.**

information, often flowing at near real-time speed, on campaign preparedness and implementation. Standards for campaign preparations have been communicated to local officials in all three countries' infected areas. Performance in meeting those standards is now measured at predefined intervals in advance of each campaign, accompanied by criteria for deciding when an activity should be postponed due to inadequate preparation.

5.29 Once campaigns have started, the emphasis shifts to in-process monitoring. The local evening vaccinator team meeting becomes the critical platform for identifying gaps in implementation and taking immediate corrective action. All the endemic countries are revising their monitoring procedures to ensure that missed children are identified each day, examining the reasons they were missed and the progress in covering them. Indicators on daily performance are also transmitted to emergency operation centres where they are analysed and flagged for action, especially in Nigeria and Pakistan. When implementation is complete, end-process evaluations are used to gauge the overall quality and identify areas needing further work or focus during the next SIA. Market surveys and independent monitoring provide data across all campaign areas. Of particular importance, the remaining endemic countries have also adopted the new "gold standard" for gauging campaign quality – Lot Quality Assurance Sampling (LQAS). This methodology strikes the best balance between ease of field implementation and statistically-reliable results that can be used to track trends over time in the most sensitive areas.

5.30 For social mobilization interventions, pre-, intra- and post-campaign monitoring is being used to ensure real-time course corrections in planning, implementation and assessment in all infected areas. To facilitate this, the GPEI has begun to refine the LQAS and independent monitoring processes to produce more consistent social data for understanding the reasons for missed children. These data guide catch-up activities and direct “intra-round” communications planning to increase OPV acceptance. This is being complemented in 2013-2014 with special investigations using a standardized tool to answer specific questions, such as the reasons for persistent transmission in areas of reported high coverage, the social and operational issues in areas with clusters of zero-dose non-polio AFP cases, and areas with chronic refusal households.

5.31 Monitoring systems for communications will continue to evolve through the endgame period. The PolioInfo system – now implemented in Afghanistan, India, Nigeria and Pakistan – already allows for regular monitoring of field-level activities, linked to a global database. Standard indicators are regularly monitored and presented in a dashboard format, to measure communication performance, identify issues, develop higher-impact messaging and demonstrate programme results. Media monitoring and other tactics will be scaled up to ensure discussion in the public sphere remains supportive of the eradication effort.



UNICEF 2012/L. Andriamasinoro

Local monitoring of campaign performance ranges from planning to implementation to post-campaign assessment.

### Surge support

5.32 Achieving repeated high-quality OPV campaigns in the persistent polio transmission areas requires a level of rigour and attention that is often overwhelming for the weak health system infrastructures in these areas. A consistent contributing factor for continued poliovirus circulation in persistent pockets is an outright lack of trained human resources and technical expertise – health-worker positions sometimes remain vacant for years, if they even exist at all. The GPEI approaches this gap in two ways: to quantify the health-worker gaps and work with officials to find solutions; to fill the gaps with a surge of additional human resources at the subdistrict level to supplement the existing capacity until vacancies are filled. Success in India showed that this approach can successfully provide the level of field presence and accountability required to achieve quality campaigns relatively rapidly. Before 2012, none of the three endemic countries had this kind of support. In 2012, that situation was reversed, with WHO and UNICEF recruiting more than 5000 field-level technical and social mobilization workers on behalf of the governments to assist local eradication efforts.

5.33 The focus in 2013-2014 is to optimize the number, distribution and skill set of this human resource surge and to track the progress in filling health-worker vacancies. Particular attention is given to further equipping and training these field-level staff so they provide the most effective support possible to local government counterparts to interrupt polio and improve immunization coverage rates.

### Technical innovations

5.34 Vaccines remain the core tool of the GPEI and the focus of technical innovation and research. The development and expanded use of bivalent OPV (bOPV) in 2009-2010 has allowed the programme to maximize immunogenicity to the remaining WPV serotypes (types 1 and 3) for each contact with vulnerable children. This resulted in record-low levels of WPV type 1 and 3 in circulation globally in 2012, with data suggesting that WPV type 3 may now be on the verge of eradication. The GPEI has also spearheaded the development of other vaccine products, including monovalent OPVs, and conducted key research to reduce the costs of IPV use and to better understand its impact in developing country settings. As global polio eradication achieves various milestones, the GPEI will tailor its use of these vaccines to best fit the epidemiological context and goals.

5.35 The GPEI is also innovating the way programmes are monitored by taking advantage of advances in geographic information systems and data transmission over mobile-phone networks. In both Nigeria and Pakistan, campaign data that used to be laboriously compiled on paper and transmitted by hand or fax increasingly flow in real time through entry into smartphones. In Nigeria, the precise location of polio cases is fixed and mapped using global positioning devices (GPS) and geographic information systems (GIS) that allow more in-depth analysis of locations where polio continues to occur. Nigeria is also leading the way in an unprecedented effort to use digital geographic tools to identify areas where children have not had the opportunity to be vaccinated and allow real-time analysis of areas that have been missed or overlooked so they can be pursued. This is the first time these tools have been used in this way and on this scale.

### Operational tactics

5.36 As detailed in the section on “Lessons learnt”, the GPEI continues to challenge and test its fundamental operational tactics to find better ways of achieving its goals. One example is the expanded use of the Short Interval Additional Dose (SIAD) strategy, which exploits shorter intervals between campaigns to more rapidly boost immunity. This scheme is particularly relevant in security compromised areas to fully take advantage of windows of opportunity, in outbreak situations to rapidly boost immunity, and in areas where persistent management weaknesses have left children unprotected for a long period of time. Use of the SIAD strategy will be considered in each of these situations in all polio-endemic and outbreak countries, as appropriate.

5.37 Other examples of operational innovations include the programme’s exploration of better ways to disburse funds to front-line workers. The payment of thousands of volunteer vaccinators over vast geographical areas in settings with poor infrastructure and management accountability systems is a big challenge and a considerable risk to achieving high-quality SIAs. In the remaining endemic countries, mechanisms for the direct disbursement of funds to front-line workers are now in place in many areas to reduce the number of transactions between fund source and vaccinator, minimize gaps in payments and eliminate “ghost teams” and underage vaccinators. Discussions are now under way in Nigeria to push this further by exploring the possibility of using vaccinator mobile phones as a method of payment.

### Research priorities to improve campaign impact

5.38 Research to identify and assess strategies that may further improve the impact of each campaign is another area within this activity. The current priorities for assessment are:

- expanded target age groups: experience from large outbreak response activities in 2010-2011 suggests that expanding the target age group for OPV beyond five years of age in SIAs may accelerate the interruption of polio transmission due to a number of factors, particularly improved coverage among the very young;
- inactivated poliovirus vaccine: increasingly strong evidence indicates that a supplementary dose of IPV can substantially boost mucosal immunity in OPV-vaccinated populations, potentially accelerating eradication.

Although extending these approaches to the remaining endemic areas has substantial communications and logistical implications, both are being evaluated further for use in endemic reservoir areas.

5.39 The polio programme in Pakistan is collaborating with Aga Khan University to pilot the use of IPV with OPV in 2013 as an additional tool to rapidly build an immune response in children that have not been easily reached through regular polio campaigns or routine immunization. Pakistan will investigate the operational feasibility of using IPV with OPV in campaigns in districts of the FATA and Balochistan, where difficult access and management issues have prevented the programme from building immunity to the levels needed to interrupt transmission. These efforts will be combined with other health promotion activities and the mobilization of paediatricians to address families’ other health concerns.



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*Some areas where polio remains are areas of insecurity, and operations in these areas will be tailored to each setting.*

#### **Activity 4: Enhancing the safety of OPV campaign operations in insecure areas**

5.40 Although the GPEI has long experience in working in insecure areas, only in late 2012 were polio vaccination workers targeted during OPV campaigns by violent, coordinated attacks that left workers injured or dead. This development establishes a new reality in some of the remaining infected areas, to which national programmes must adapt as they extend their reach to those last populations and places where WPV remains endemic or, in the case of Somalia, where the cVDPV outbreak is persistent. These places and populations are often characterized by a long history of neglect, receiving little or no services or external assistance, which has contributed to an environment favourable to suspicions, conspiracy theories and other issues that appear to underpin the violent reaction the programme has encountered in its work to reach some of these areas.

5.41 Addressing this new reality has required the establishment of a new overarching framework for operating in insecure areas, with tailored approaches for each priority insecure setting. The basic elements of this framework include:

- **operational adjustments to polio campaigns:** SIA operational adjustments are being made to reduce the exposure of the programme and vaccinators to potential threats (e.g. phased or low-profile campaigns, fixed site, etc.), based on district-specific risk assessments;
- **programme safety and security:** coordination between civilian, health and security services is being enhanced to improve the physical safety of vaccinators and facilities where necessary (e.g. through provincial security coordination committees, police escorts, etc.), again based on district-specific risk assessments;

- **community demand:** particular attention is being given to improving the local community demand for access to vaccination and basic services through a combination of awareness-raising activities around the disease, its consequences and prevention and, if appropriate, by coupling OPV with the delivery of other services or interventions;
- **religious leaders' advocacy:** advocacy is being increased by international, national and local Islamic leaders to build ownership and solidarity for polio eradication across the Islamic world, encouraging the protection of children against polio, the sanctity of health workers and the neutrality of health services;
- **measures to prevent poliovirus spread:** increased emphasis is being given to reducing the risk of spread from such areas by continuing an intensive SIA strategy in surrounding areas and ensuring the vaccination of travellers in and out of infected areas to the degree possible. Permanent immunization teams have been established on the periphery of access-compromised areas in an effort to increase the opportunities for immunizing any children moving in and out of these areas. Such teams are also operating around-the-clock at important border crossings between Pakistan and Afghanistan, to cover travellers between the two countries and reduce the international spread of the virus.

5.42 This overall approach and the tactics at the national level in particular will be formally reviewed and adjusted on a six-monthly basis to assess lessons learnt and take corrective or new actions as needed. If the polio programme and local community are unable to address these security threats in some areas, or are unable to access sufficient children to stop transmission, a series of contingency strategies and tactics will be implemented. Additional actions at that time could include a combination of new measures to further reduce the risk of spread from any remaining infected area(s) (e.g. consideration of a standing recommendation for vaccination of travellers under the International Health Regulations); steps to further increase the impact of each immunization contact in these areas (e.g. expanded target age groups; house-to-house delivery of IPV, potentially using hand-held jet injectors); extraordinary negotiations to access children through ceasefires, Day of Tranquility or similar measures when virus transmission is restricted to a very small area; and exceptional measures for the safety and security of vaccinators in very limited areas.

### Activity 5: Preventing and responding to polio outbreaks

5.43 The primary strategy for reducing the risk of polio outbreaks following WPV importations or due to the emergence of a cVDPV will be the rapid strengthening of immunization services, as outlined in Objective 2 of this Plan. This will be complemented by continued SIAs in areas at highest risk of importations and/or cVDPV emergence as summarized in Activity 2 above.

### New overarching security framework:

- operational adjustments to polio campaigns
- programme safety and security
- community demand
- religious leaders' advocacy
- measures to prevent virus spread

If the polio programme and local community are unable to address security threats, or are unable to access sufficient children to stop transmission, a series of contingency strategies and tactics will be implemented

To further reduce the international spread of polioviruses, all countries will be urged to fully implement WHO's existing recommendations for the vaccination of travellers, as outlined in Chapter 6 of WHO publication *International travel and health* and reinforced by the WHO Executive Board in January 2013

A more aggressive approach to outbreaks of both WPV and VDPV will be implemented with the goal of stopping any new poliovirus outbreak within 120 days of the index case.

5.44 In addition, to further reduce the international spread of polioviruses, all countries will be urged to fully implement WHO's existing recommendations for the vaccination of travellers, as outlined in Chapter 6 of WHO publication *International travel and health* and reinforced by the WHO Executive Board in January 2013.<sup>18</sup> In 2014, the Director-General of WHO may convene a Review Committee, under the International Health Regulations (2005), to advise on the need for a standing recommendation in 2015 on the vaccination of travellers to and from any area with persistent poliovirus transmission.

5.45 A more aggressive approach to outbreaks of both WPV and VDPV will be implemented with the goal of stopping any new poliovirus outbreak within 120 days of the index case. Building on experience from more than 100 WPV and VDPV outbreaks over the last 10 years, the new response tactics will include implementing a minimum of five response rounds (each covering a minimum of 1 million people), expanding the target age group for the first

two rounds (e.g. to less than 15 years of age or the entire population, depending on the epidemiology), and reducing the interval between the first three rounds (e.g. from 4-6 weeks to 2-3 weeks). Joint national and international rapid assessments will be conducted at three and six months following the index case to assess the quality of the outbreak response and plan course corrections.

5.46 Whereas outbreak response activities have historically been driven by isolation of a poliovirus from a paralysed child, during the eradication and endgame period environmental data will also be used more systematically to guide outbreak response planning and implementation. For endemic and other high-risk areas, the detection of a positive environmental sample will help to guide the geographic extent as well as the duration of a response. In previously polio-free areas, the detection of a positive environmental sample will trigger both a virologic and epidemiologic investigation to guide heightened surveillance and, if appropriate, an immunization response.

## 5.5 WHO OVERSEES THIS WORK?

### The Independent Monitoring Board

5.47 Independent oversight of polio eradication activities is provided by the Independent Monitoring Board (IMB).