A REPORT COMMISSIONED BY THE INDEPENDENT MONITORING BOARD OF THE GLOBAL POLIO ERADICATION INITIATIVE ON PROGRESS IN AFGHANISTAN, NIGERIA AND PAKISTAN

REVIEW OF POLIO ENDEMIC COUNTRIES

SEPTEMBER 2018

CONTENTS

A. LIST OF ACRONYMS

AEFI	Adverse Event Following Immunization
AFP	Acute Flaccid Paralysis
AGEs	Anti-Government Elements
APW	Agreement of Performance of Work
BPHS	Basic Package of Health Services
CBV	Community Based Vaccination
CHIPS	Community Health Influencers, Promoters and Services
CHW	Community Health Worker
cVDPV	Circulating Vaccine-Derived Poliovirus
DDM	Direct Disbursement Mechanism
EOC	Emergency Operations Centre
GDP	Gross Domestic Product
GPEI	Global Polio Eradication Initiative
ICN	Immunization Communication Network
ICRC	International Committee of the Red Cross
IDP	Internally Displaced Person
IMB	Independent Monitoring Board
LGA	Local Government Area
LQAS	Lot Quality Assurance Sampling
MICS	Multiple Indicators Cluster Survey
mOPV2	Monovalent Oral Polio Vaccine Type 2
NATO	North Alliance Treaty Organization
NGO	Non-Governmental Organization
NOC	Non-Objection Certificate
PHEIC	Public Health Emergency of International Concern
POB	Polio Oversight Board
RES	Reaching Every Settlement
RIC	Reaching Inaccessible Children
SIAs	Supplementary Immunization Activities
TAG	Technical Advisory Group
UNICEF	United Nations International Children's Emergency Fund
UNOCHA	United Nations Office for the Coordination of Humanitarian Affairs
VCM	Volunteer Community Mobilizer
VHRDs	High-Risk Districts
WHO	World Health Organization
WPV	Wild Poliovirus

B. ACKNOWLEDGEMENTS

Review team members would like to thank the Polio Oversight Board, the members of the Independent Monitoring Board of the Global Polio Eradication Initiative and the Independent Monitoring Board's Chair, Sir Liam Donaldson, for having provided us with the opportunity to conduct such an important, fascinating and timely exercise. The three country visits were highly intensive. We are very grateful for the enormous efforts that were put into organizing complex logistics, including to help ensure our safety and security in what were often challenging circumstances. We were highly appreciative of the great amount of time made available to us by so many individuals and of the frankness of the exchanges we enjoyed with senior government, traditional, religious and military leaders and partner officials. One important feature of our missions was the provision of female translators at all locations, something that enabled our own female team members to enter many homes, meet with many caregivers and engage freely with the highly courageous and committed field workers we met in each country. We would like to express our warmest appreciation for the professional support provided by the members of Sir Liam Donaldson's very small secretariat at the London School of Hygiene and Tropical Medicine: Alison Scott was a model of experience, efficiency, judgment, common sense and flexibility and Katie Hayes, who accompanied us on all of our missions, managed to bear an enormous logistical burden whilst also contributing invaluable professional insights and instincts, all of which made her an invaluable, full member of the team. Finally, whist one or two of the review team members knew each other well and had worked together previously, most had not and the way in which they were willing to come together and function harmoniously as such a strong and multi-talented group, made this a particularly rich and rewarding experience for us all.

C. EXECUTIVE SUMMARY

Background

Despite progress towards eradication of wild poliovirus (WPV) in the three remaining endemic countries, transmission of the virus has continued in 2018. The Polio Oversight Board (POB) of the Global Polio Eradication Initiative (GPEI) asked the Independent Monitoring Board (IMB) to commission a review with the goal of identifying actions to help accelerate progress towards sustained interruption of WPV. The IMB commissioned a multi-disciplinary team to assess what is working well and what could be further strengthened; to identify any major constraints; and to make recommendations to the IMB and the POB for their consideration.

The team visited Afghanistan, Pakistan and Nigeria spending approximately 10 days in each country. Team members spent half of each visit outside the capital cities travelling to some of the highest risk areas for WPV transmission. The team reviewed extensive documentation and interviewed key stakeholders including senior leadership, frontline workers, community members, and informants from other humanitarian organizations. In this report, the review team has attempted to highlight areas for improvement, but specific responses to the issues identified are best determined at the country level, by the respective governments and GPEI partner organizations.

Overview

Access limitations due to insecurity continue to represent the biggest threat to polio eradication and progress towards interrupting transmission has stalled. Afghanistan's security situation is deteriorating and the number of cases has more than doubled compared to this time last year. Pakistan has widespread circulation of WPV documented by positive environmental specimens but isn't acting decisively on these findings. Whether or not poliovirus transmission continues in Boko Haram controlled areas of Nigeria is unknown.

Cross-cutting findings

- **Operating environment:** The poliovirus has taken refuge in some of the most challenging and dynamic environments in the world. The resilience and dedication of the staff who work in these areas is extraordinary.
- **Access and security:** Insecurity remains the overriding threat to the programme. Unless security related constraints are effectively addressed, the global effort cannot succeed.
- **Emergency culture:** All three countries have prioritized polio eradication at the highest levels of government. However, the sense of urgency, flexibility, and local empowerment needed to address polio as a global public health emergency is not consistently evident.
- **Management and oversight:** The complexity of the GPEI structure and the demands it creates for reporting, distracts country programmes from the preeminent mission of interrupting transmission.

- **Human resources:** It is not evident that sufficient efforts are made to incentivize recruitment of the best staff and ensure the proper duty of care in insecure environments. In addition, the balance of national and international staff needs to be carefully considered to obtain the greatest possible access for programme monitoring.
- **Unmet basic needs and fatigue:** Communities in the highest risk areas lack access to food, water, sanitation and basic health services. The resulting frustration leads to refusals and absent children among key populations. Eradication will be hard to achieve without effective advocacy and coordination to help ensure the basic needs of high-risk communities are met.
- **Community perceptions:** Lingering mistrust in the programme, such as questions of government ownership, programme neutrality and vaccine safety, contributes to the number of missed children.
- **Routine immunization:** Routine immunization coverage is extremely low in critical areas of each endemic country. There is increasing collaboration between polio and routine immunization programmes, but political will must be strengthened to raise coverage and support programme activities.
- **Data:** All three countries have well established data monitoring systems. However, the countries are overburdened with external data requests and have limited time to use data to improve programme quality between rounds. In Pakistan and Afghanistan, inconsistency between epidemiology and monitoring data raises questions of data quality.
- **Finance:** While an audit was not conducted as part of the review, there is no evidence of major areas of financial excess. Countries are implementing special initiatives to address perceived areas of risk. Prematurely reducing budgets prior to interrupting transmission threatens eradication.
- **Transition:** Given the current situation, a focus on transition planning in Afghanistan and Pakistan is potentially distracting. In Nigeria, the pace of transition should be tailored to the circumstances in each state.
- **Surveillance:** Well-established acute flaccid paralysis (AFP) surveillance systems exist and generally report high quality performance at the first sub-national level. Disaggregation of data shows challenges with indicators at lower levels. Extensive environmental surveillance is well established, and is critical to complement AFP surveillance.

Country-specific findings

Afghanistan

The situation in Afghanistan represents the most significant impediment to global eradication efforts. The number of cases to date has more than doubled compared to this time last year. The security situation is increasingly complex and deteriorating, resulting in more than a million children being missed in May and August. The programme is reluctant to compromise or consider creative approaches to vaccination in inaccessible areas. Anti-polio propaganda in the East is not being adequately countered. There is insufficient time or capacity between rounds to address gaps in programme quality. Recognition of the risk of importation from Pakistan should not diminish focus on efforts to strengthen and maintain high domestic immunity. The programme management and governance structures are not adequately equipped to address the enormity of these challenges and do not reflect the characteristics of an effective emergency response.

Pakistan

The Pakistan polio programme has the potential to interrupt transmission. However, environmental surveillance reveals continued widespread transmission of the virus and variable quality of immunization activities. Further action is needed to collect, triangulate and analyze union council level data in high-risk areas and to develop specific approaches to improve programme quality and consistency. Strategies to reach children who are out of their houses during campaign days should also be strengthened. Delays and rejections in processing visas and internal travel authorizations continue to inhibit programme monitoring and support. Recognition of the risk of importation from Afghanistan should not diminish focus on efforts to strengthen and maintain high domestic immunity. There has been strong government leadership, including active engagement of the civil administration, and it is critical to maintain polio as a top priority for the incoming government.

Nigeria

After two years without a case, there are grounds for optimism that Nigeria is succeeding but there is no room for complacency as long as parts of the North-East remain unreached. Despite nascent strategies to conduct AFP surveillance in inaccessible areas, WPV circulation cannot be ruled out. The humanitarian crisis in the North-East affects over seven million people and the security situation is expected to remain fragile. Close coordination with military and the Civilian Joint Task Force allows vaccination opportunities but requires careful consideration. Strong technical leadership and coordination exist at the national Emergency Operations Centre (EOC) and sub-national EOCs, however, political engagement seems to be waning. Innovation, flexibility and the delegation of authority enable rapid response and adaptation to a constantly evolving operating environment at the sub-national level. Continued application of the accountability framework needs to be closely monitored. Intense involvement of traditional and religious leaders has improved community acceptance of the vaccine.

Selected recommendations:

- Focus on enabling vaccination and surveillance in inaccessible areas should remain a top priority; flexible approaches to the associated negotiations should be emphasized and regularly reviewed.
- Starting at the top, the polio programme should reflect all the relevant attributes of an emergency response and ensure a sense of urgency and flexibility at all levels.
- The POB should make every effort to reduce the reporting burden on countries and ensure that the management structure is appropriate for this stage in the eradication process.
- Partner agencies should urgently resolve staffing issues to ensure the strongest possible teams at country level and then empower those teams to manage on the basis of their own capacity and knowledge of local realities.
- Governments, in collaboration with development partners, must intensify efforts to address unmet needs in the highest risk and poorest communities.
- Every effort should be made to demonstrate government ownership, rapidly address community concerns, and maintain humanitarian principles in relation to ongoing eradication efforts.
- The IMB should explore ways to promote increased political prioritization of routine immunization.
- Simpler and higher-impact use of data are needed and may be strengthened by: collection, triangulation and analysis at lower administrative levels, investigation of discrepancies between epidemiologic and monitoring data, and increased time between vaccination rounds.
- Programme needs should drive budget requests and every effort should be made to ensure the necessary human and financial resources.
- Transition planning should not be allowed to distract countries from the primary task of eradication.

D. INTRODUCTION

1. Background

Despite considerable progress towards eradication of WPV in the three remaining endemic countries, transmission of the virus has continued in 2018. The POB of the GPEI asked the IMB to commission an external review with the goal of identifying actions that might help accelerate progress towards sustained interruption of WPV. Afghanistan, Nigeria and Pakistan, the three countries concerned, welcomed the GPEI proposal in order that the IMB might become better informed of on-ground realities.

To this end, the IMB commissioned a multi-disciplinary team (see Annex 1) to assess what is working well and what could be further strengthened; to identify any major constraints and areas where improvement is needed; and to make recommendations to the IMB and the POB for their consideration. The scope of the review was as follows:

- assess whether the programme functioning and structure are fit for purpose to achieve eradication, including surveillance performance, data accuracy and validation processes, epidemiological investigations, communications and the use of social data and any other relevant operational or technical activities;
- review programme management, advisory mechanisms and structures and propose any improvements, if needed;
- examine the process used to develop the National Emergency Action Plans;
- assess, at a high level, the financial and human resource situation across all stakeholders within the country, including to flag any potential areas where resources could be used more efficiently, as well as to identify any potential areas for streamlining; and
- explore ongoing and potential collaboration with other health and development programmes including routine immunization, malaria control, nutrition, and humanitarian response.

2. Process

Preparations included the review of background materials (Technical Advisory Group (TAG) reports, previous reports of the IMB etc.). Interviews were also conducted with key informants, including representatives of GPEI working groups at the global level.

The first field missions took place in Afghanistan and Pakistan in late-June and early-July 2018, and the third in Nigeria during the first half of August, with the team spending approximately 10 days in each country. An important feature of the country visits was the amount of time spent outside the respective capitals. Team members travelled to some of the most critical and high-risk locations for WPV transmission, including those previously highlighted by the IMB and the TAGs. These included locations that are plagued by insecurity and access challenges. The team members are grateful for the planning and provision of physical protection that enabled these visits to take place safely.

In Afghanistan, half of the review team travelled to Kandahar and the border with Pakistan at Spin Boldak, while the other half visited Jalalabad and adjacent districts in Nangarhar in the Eastern Region. In Pakistan, the team split into three to visit Balochistan, Sindh and Khyber Pakhtunkhwa (including the Tribal districts, formally known as the Federally Administered Tribal Areas). In Nigeria, team members visited Kano, Kaduna and Borno, including the border with Cameroon (See Figures 1 and 2 below, as well as Annex 2 for a full list of locations visited). In all locations, priority was given to maximizing opportunities for interactions with community members and leaders, frontline workers, government officials and WHO and UNICEF staff and contractors at all levels.

Figure 1: Locations visited in Afghanistan and Pakistan

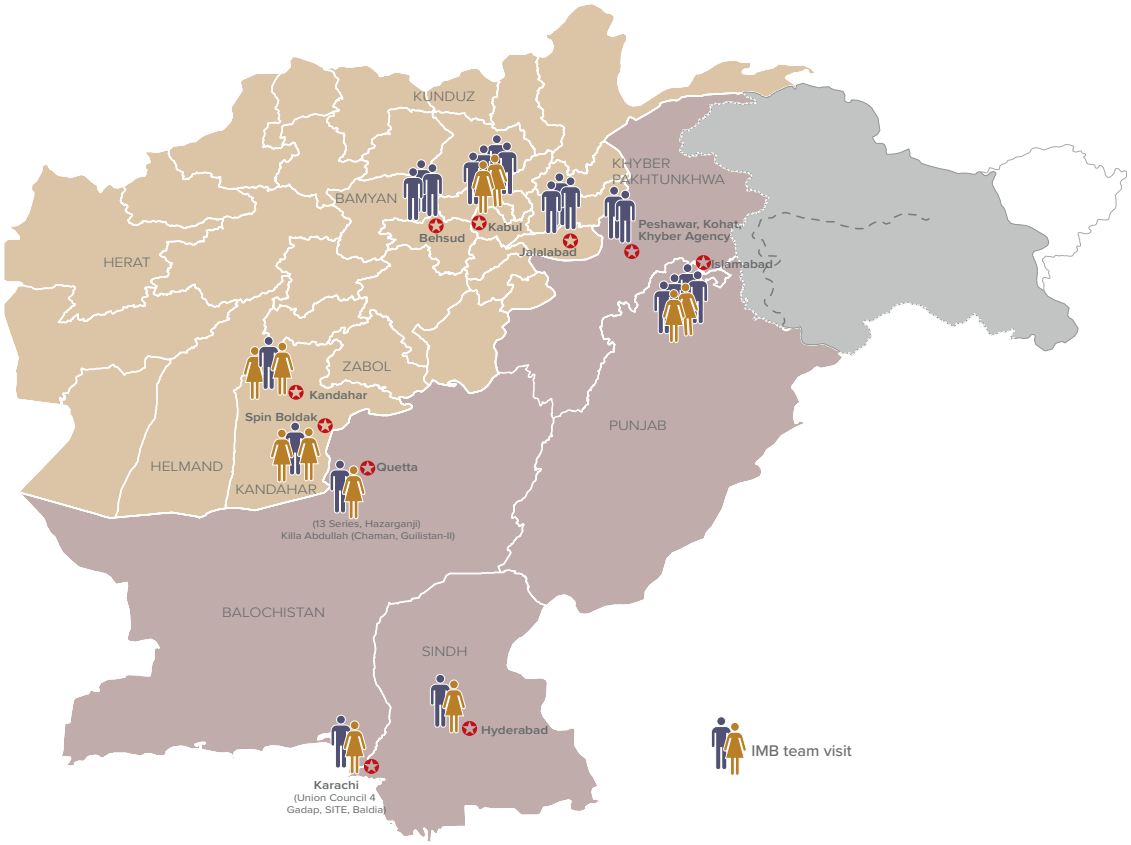
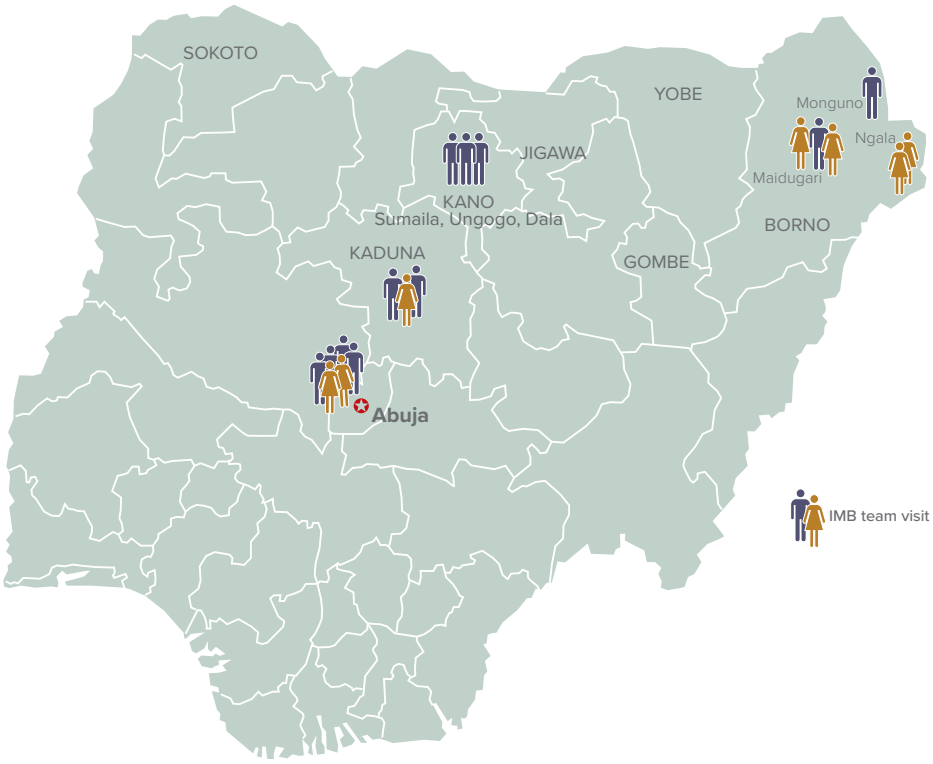


Figure 2: Locations visited in Nigeria



In each capital, the team met with health ministers, senior government officials, the national EOC leaders and their teams, representatives of partner agencies, donors, non-governmental organizations, military and security advisors, and religious and traditional leaders among others. Consistent efforts were made to ensure discussions took place under circumstances that encouraged openness and plain speaking. In one presentation to the core team of the national EOC in Islamabad, one senior colleague noted that “problems are good”, in that their identification can lead to improvements, and this became a recurring point of reference in subsequent interactions during the review team’s visit there.

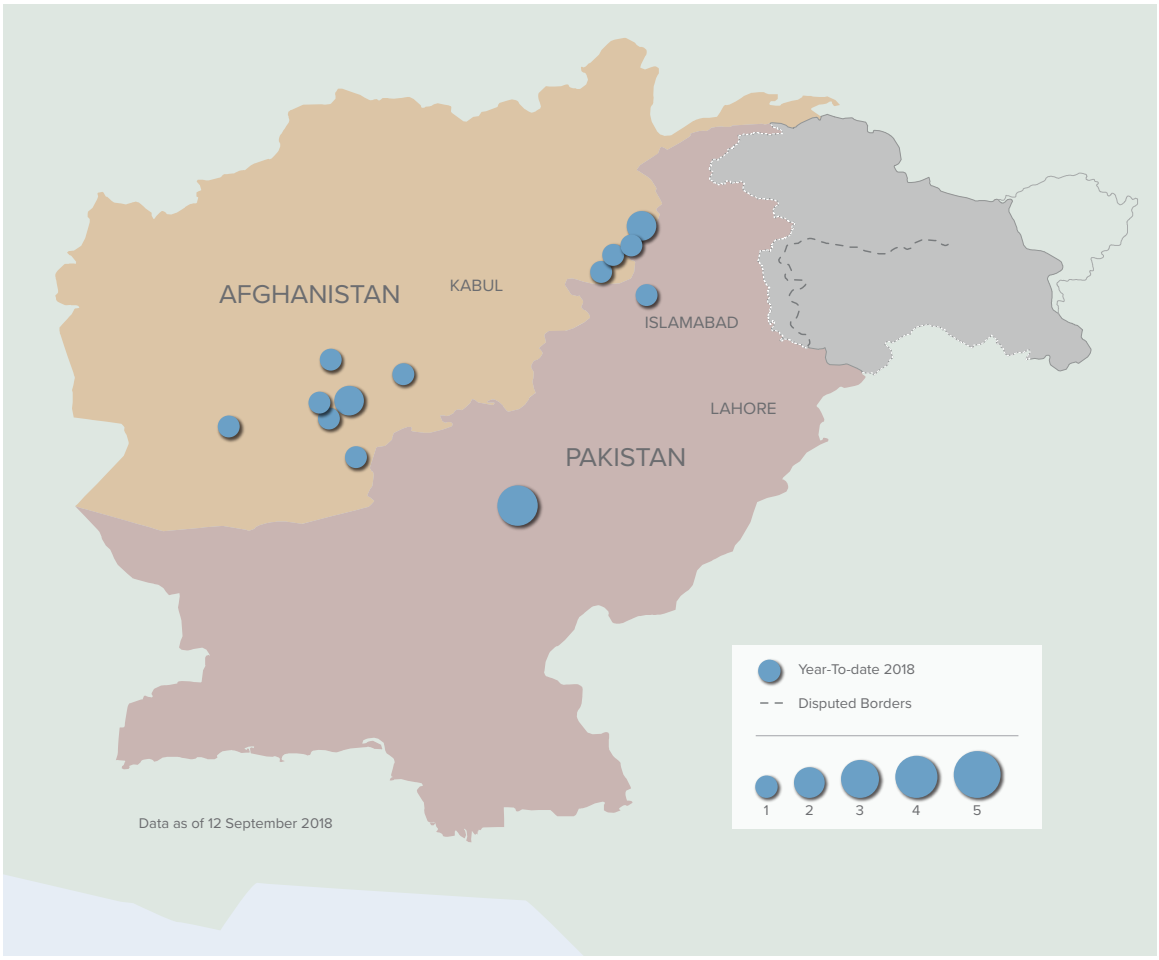
These are very large and complex programmes being operated in highly challenging environments. Although most of the team’s members had prior and in some cases extensive and relatively recent experience in all three countries, they also recognized that circumstances change rapidly. Solutions to the problems highlighted during the review are best determined at the country level. This was not a full-scale evaluation, it is a ‘snapshot’ and the intention was to be helpful in flagging questions, doubts or concerns, as well as to give the IMB a more nuanced sense of ground realities. We hope that our report will be considered in that same spirit and that we will be forgiven if, due to limitations of time, there may be things we did not fully understand.

3. Status of wild poliovirus eradication efforts

Globally, the total number of reported WPV cases in 2018 (as of 12 September 2018) was 17 (compared with 10 for the same period in 2017)(see Figure 3). To date, 13 cases have been reported in Afghanistan (compared with six for the same period in 2017); four in Pakistan (compared with four for the same period in 2017); and none in Nigeria, where the onset of the last case was in August 2016.

Access limitations due to insecurity continue to represent the biggest threat to polio eradication and progress towards interrupting transmission has stalled. Afghanistan's security situation is deteriorating, and the number of cases has more than doubled compared to this time last year. Pakistan has widespread circulation of WPV documented by positive environmental specimens but isn't acting effectively on these findings. Whether or not poliovirus transmission continues in Boko Haram controlled areas of Nigeria is unknown. The circulating vaccine-derived poliovirus (cVDPV) outbreak in Nigeria is also a cause for concern.

Figure 3: Map of cases in Afghanistan and Pakistan (data as of 12 September 2018)



E. CROSS-CUTTING FINDINGS AND RECOMMENDATIONS

1. Access and security

Insecurity remains the overriding threat to the programme in Afghanistan, Pakistan and North-East Nigeria and hence to the global eradication effort overall. Unless access constraints related to insecurity are effectively addressed, the global effort cannot succeed and there can be no confidence that polio has been eradicated.

In Afghanistan, the virus has taken refuge in those parts of the country most affected by the ongoing conflict. The security situation is deteriorating across the whole country and the pace of this deterioration is accelerating. This is due in part to the presence of new anti-government elements (AGEs) such as DAESH. In Pakistan, while there have been improvements in the overall security situation in recent years, threats remain, particularly in those areas that are most critical to the programme. In North-Eastern Nigeria, where the last four WPV cases occurred in 2016, the programme is being implemented in the context of continuing conflict and related access restrictions due to the Boko Haram insurgency.

A tribute to frontline workers

In all three countries, frontline workers knowingly put themselves at risk of violence, intimidation, harassment and even death. Despite low levels of remuneration, they continue to display outstanding levels of courage, commitment and determination. They take pride in their work and strive to ensure the quality and maximum possible reach of the programme.

In all countries, review team colleagues made a particular point of expressing their appreciation to all of the front line workers they met. In Balochistan, the first union council that review team members chose to visit was Hazarganji, where Sakina Bibi and her daughter Rizwah were both shot in the head and killed in the course of a campaign in January 2018. Sakina left behind a husband and six other children.

There were calls from polio programme staff and partners for the establishment of mechanisms to enable due recognition of the courageous and vital roles played by the front line workers. The review team wholeheartedly supports these sentiments.

2. Emergency culture

In 2014, WHO declared the international spread of poliovirus as a Public Health Emergency of International Concern (PHEIC).

As it considered the implications of such a declaration, the review team reflected on what would normally be considered essential features of an effective emergency response, including: speed in all aspects of programme design and implementation; rapid and continuing assessment of the capabilities of response teams and deployment of the best staff; decentralization of authority to the country level; maximum flexibility and innovation in the ongoing adaptation of strategies based upon what are often fast changing local realities; reduction in burdensome reporting and consultation requirements; rigorous enforcement of accountabilities at all levels; and a razor sharp focus on results. The review team looked at each country programme for evidence of these characteristics.

Embodiment of these approaches and the sense of urgency and accountability that inform them must start at the topmost levels of each of the key stakeholder bodies (including particularly the respective Governments and at the leadership levels of the member organizations of the GPEI) and be rigorously respected by managers and team members at all levels below.

It would appear that even after the 2014 declaration of PHEIC, the programme has not consistently demonstrated the characteristics and culture of an emergency response. Perhaps unsurprisingly in a programme that has been running for 30 years, at times implementation has become ‘business as usual’, with a failure to consistently reflect the dynamism and urgency that are required.

Due to its character as a chronic, long-standing emergency, it is hardly surprising that the programme appears to have lost its ‘edge’ in some of these aspects. However, in the last minutes of such a long game, now is not the time to ease-off. The programme cannot become bogged down in process and bureaucracy, must remain open and flexible to the adoption of new strategies, ensure that it deploys the best people to the most difficult places, and remain fully focused on interrupting transmission.

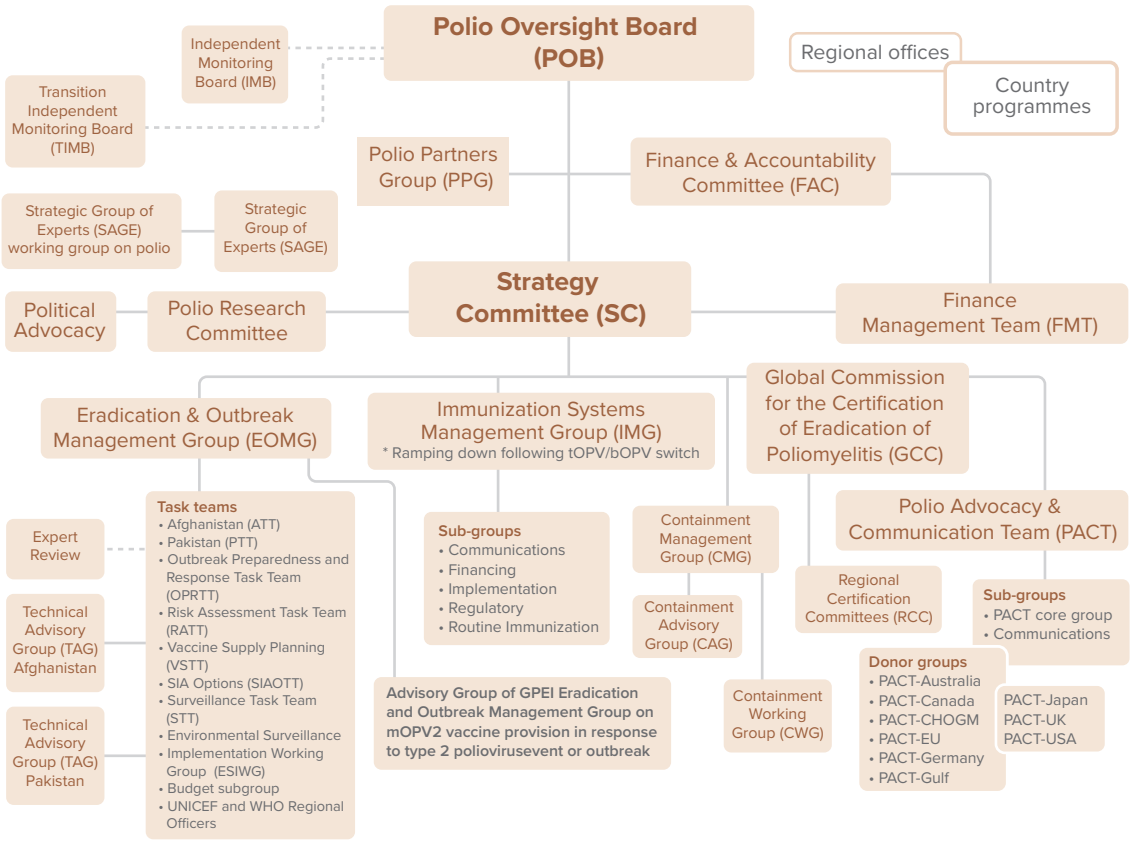
3. Programme management and oversight

The principal priority for the GPEI is to interrupt WPV in the last three endemic countries while managing additional challenges such as cVDPVs.

Following its inception in 1988, at which time there were an estimated 350,000 cases annually across 125 endemic countries, the GPEI has proceeded to build what has become a massive infrastructure at the global and regional levels to support countries in their national eradication efforts (see Figure 4).

In 2018, with only three endemic countries left, the question has to be asked as to whether this elaborate structure remains fit for purpose, or whether it may now be a drag on country level efforts. In all three countries visited, local teams highlighted the heavy demands on their time caused by the need to 'feed the beast' and to meet constant demands from above for reporting and consultation. It was noted in one exchange that excessive demands from the GPEI and partners focus heavily on data and process, taking time away from efforts to improve the actual usage of such data and from other country-driven efforts to improve programme quality.

Figure 4: GPEI Boards, Committees, Groups, Sub-Groups, Teams and Task Teams.



There was also a degree of frustration over the need to seek permission for country-level initiatives and, in the process, to convince colleagues at headquarters and regional office levels who are not always fully conversant with local circumstances. In another instance, one programme manager recalled a time when a batch of monovalent oral polio vaccine type 2 (mOPV2) was urgently needed to respond to the cVDPV outbreak in Nigeria, only to find that the headquarters office was closed for a holiday over a long weekend.

The review team believes that with so few countries still in play, and with so much expertise and experience available from the past 30 years, it should be possible for the implementing partners to deploy such high-quality teams at the country level that they should not need the levels of remote management and hand-holding that the current model entails.

As one partner officer commented in Pakistan, *"Having standard requirements for reporting is fine, but the GPEI places phenomenal further demands on reporting from the country and regional offices, and then there is another layer of reporting to all the global level task teams, committees and boards where you have to report on the same thing multiple times. We have assigned a senior polio officer solely to fulfil these requirements".*

It is recommended that the POB review the current GPEI structure, with a view to reducing the burden on country programmes and ensuring that its primary focus is on timely response to expressed needs for support that emanate from the country level. The POB must ensure that each component of the GPEI organogramme can be justified in terms of its direct contribution to the work and the needs of the programme. Emphasis on empowering country teams to track and pursue the virus must be the pre-eminent principle. This should include a review of the efficiency of the current technical support structure, whether from the headquarters or regional levels. Possibilities could include the elimination of superfluous working and task groups and combining certain meetings.

4. Human resources

a. Having the right people in the right places

Having the right people in the right places, and empowering and supporting them in their work is probably the single most critical factor for the success of any programme. It is particularly important when facing the sort of challenges confronting polio eradication efforts in Afghanistan, Pakistan and Nigeria. As has also been noted, having 'the best of the best' on the ground should also reduce the need for micro-management and technical support.

Conversely, it only takes one or two poorly performing people in key positions to disrupt the performance of what might otherwise be an effective team. In the past, programmes have at times been hampered by staffing issues including incompatibilities between key members of UNICEF and WHO teams. The situation has improved in recent years and the review team was generally impressed by the calibre of current staff, as well as by relationships between the UNICEF and WHO teams in all three countries. However, it is critical that staffing issues are addressed urgently when they arise and that the staffing situation is kept under review by UNICEF and WHO Representatives in each endemic country, as well as by the respective Regional Directors.

Needless to say, the same applies to staffing of government positions and this is particularly important if true government ownership and leadership are to be assured. The review team felt that in both Afghanistan and Pakistan there was inconsistency in the calibre of senior government officials serving at the sub-national level with some excellent individuals performing critical roles, while others did not appear to be serving as the kind of exemplars that are required. All three countries need to ensure active oversight of this aspect.

In addition to having the right people in the right places, it is essential that staff are organized into structures that are fit for purpose and embody clear systems of accountability. For example, in Kandahar, there was a strong collegial atmosphere among UNICEF and WHO colleagues but there was no clear sense as to which of them was *primus inter-pares*.

Assertion and acceptance of the leadership role of government was more evident in Pakistan and Nigeria than it was in Afghanistan. This included the close engagement of civil administrators in the former two countries, a feature that was particularly evident in most areas visited in Pakistan. One exception was in Sindh, where insufficient priority appears to be given to regular visits to and presence in high-risk communities by senior members of the civil authorities. Furthermore, while creation of an atmosphere that encourages team members to share experiences, or dissenting views is a healthy sign of a strong, cohesive and effective team, in Karachi even at the sub-national EOC level, the majority of team members appeared hesitant to participate freely in discussions with members of the IMB mission.

b) Women hold the key

Engaging more women to interact with families in their homes has long been recognized as particularly important in gaining the trust of caregivers and their children. Remarkable progress has been made in Pakistan, including in conservative Pashtun communities. The transformative effect of increased engagement of women on the frontline, including through the Community Based Vaccination (CBV) programme, was consistently identified as one of the most important factors in enabling improved coverage and acceptance.

In Nigeria, the network of Volunteer Community Mobilizers (VCMs) has equally been recognized as representing one of the particular strengths of the programme and plans for the transition of polio assets to support broader national health priorities include the absorption of VCMs into the Community Health Influencers, Promoters and Services (CHIPS) programme that was recently introduced as part of the country's new Primary Health Care Revitalization programme.

In Afghanistan, and particularly in the Pashtun areas of the South, women's engagement has proven to be much more difficult to secure, but nevertheless, the programme is urged to continue and intensify its efforts in this regard. The declining economy in the Southern Region may help change previous dynamics, including by increasing competition for such jobs as are available and prompting greater acceptance of roles for women that previously were not considered culturally acceptable. In addition, the programme should explore more intensively the possibility of engaging older women (like the 'Spinsarees' in Pakistan), who may have more freedom to move outside their own homes.

All this having been said, the programme needs to avoid the temptation to totally focus on women, and engage at the same time with all caregivers, particularly since most resistance to vaccination appears to originate from men and it is men who have the power in these communities.

As UNICEF and WHO establish and regularly review their staffing structures, it is important that they consider carefully the balance between national and international staff and consultants and emphasize the maximum engagement of women throughout the programme, especially on the frontlines. Careful consideration of the balance between national and international personnel is particularly important in insecure areas where the movement of internationals is often limited and in areas where intimate knowledge of the local culture and language is particularly important. For example, due to the deteriorating security and access situation in the East of Afghanistan and the constant pressure on district and sub-district staff to deliver results, the review team felt that that campaign data look too good to be true and may not reflect ground realities. In such circumstances, it may be that national staff can do more than international staff to help verify the accuracy of such data.

Staff deployments to the top polio 'hotspots' in each country are particularly critical and therefore need the closest attention. When performance or other issues become apparent, urgent and decisive management action must be taken: the review team was not convinced that this is always the case and encountered more than one example of concern.

An all-pervasive spirit of urgency is essential to the success of the programme and yet, particularly during some encounters in Afghanistan, this was not always evident. Clear expectations of performance need to be set and constantly reinforced through close supervision and efforts to foster and reinforce an all-pervasive sense of energy and intensity. This should include encouragement of all team members to maximize opportunities to spend time in the field monitoring and supporting activities.

b. Terms and Conditions of Service

For UNICEF and WHO, having 'the best people in the most difficult places' means, among other things, taking measures to ensure that service in difficult duty stations is made attractive for the best and most ambitious of their staff. For individuals on full staff contracts, incentives already include financial benefits, regular rest and recuperation and so forth. However, a more important incentive for the strongest available candidates would likely be for them to be able to have confidence that their service under such challenging conditions would be recognized and rewarded through accelerated career progression or future service in more 'attractive' locations (e.g. family duty stations).

Unfortunately, rather than being recognized as a 'plus', some colleagues reportedly feel that their work in 'emergency' environments may cause them to become stereotyped unfairly as unfit for anything else. It has long been recognized by both UNICEF and WHO that the burden of serving in the most difficult places should be more evenly shared across all qualified staff in each organization. In the case of UNICEF, this has been formally recognized and periodically re-asserted since 1998 (at *The Martigny Meeting*).

Sadly, the goal of 'mainstreaming' capacity for work in emergencies has never been achieved, with the same individuals being repeatedly deployed to the most difficult places.

For categories of worker in the programme other than regular staff, the situation is more problematic. These include consultants who are hired by both UNICEF and WHO under terms and conditions of service that are inferior to those enjoyed by regular staff.

In all three countries, for example, WHO continues to make extensive use of *Agreement of Performance of Work* (APW) contracts, a mechanism that is used by the agency worldwide. The APW was described to the team as a barebones contract that reportedly offers nothing in the way of health insurance, life insurance, pension, holiday, sick pay or expectations for further employment. Rates of pay are lower than those for equivalent staff positions. Most importantly for the polio programme, APW contract holders do not fall under the protection of the United Nations Department for Safety and Security umbrella and are not governed by movement or other restrictions imposed by the United Nations on its staff for security reasons. This is evidently seen as an advantage by managers who would otherwise be unable to ensure access to some of the more high-risk environments. For the review team, the reliance on APW contracts in such areas raises ethical concerns despite the importance of securing access.

Given that polio eradication is now focused in a few highly complex and insecure areas, the programme must fully recognize its responsibilities towards those who are willing to work in such areas . This includes ensuring appropriate and intelligently-tailored security risk management measures; providing contracts that include benefits such as health and life insurance; and enabling reasonable expectations that good performance may result in future employment opportunities.

Finally, the use of APW and similar contracts may serve as a disincentive when it comes to the recruitment and retention of the highest possible calibre of personnel, particularly in the most challenging environments and in areas where suitable candidates may be in short supply.

In all three endemic countries, UNICEF and WHO have been exploring ways of addressing this issue, partly through the use of third party employers including, in WHO Afghanistan's case, the United Nations Office for Project Services. In Pakistan, UNICEF has engaged a third party to deal with all aspects of personnel management under the CBV programme, including hiring, supervision, and payment. In areas that are transitioning from the previous WHO-run Female Community Volunteer programme, similar arrangements are being put in place. In Nigeria, UNICEF uses Deloitte to manage aspects of the VCM programme.

Workers at all levels of the programme in Afghanistan and Pakistan complained about low rates of pay. In Pakistan, for example, the Community Health Workers (CHWs) who play such a fundamentally

important role in the programme, earn just 15,000 rupees (around USD 120) per month. It is not clear how rates of pay and other benefits are set within the programme, including in comparison with pay scales in regular government service or the private sector. In Pakistan, there were also common complaints about delays in payment.

c. Transparency in recruitment and management

Polio provides an income to tens of thousands of people in all three countries, including in areas where job opportunities are limited. In Afghanistan, inappropriate interference in the selection of staff, particularly at district level and below, was reported from both government and Taliban controlled areas in both the South and the East. In the South, this is partly fueled by the decline in economic activity following the large-scale reduction in international investment and increased competition for jobs. More positively, the large numbers of people who depend upon polio for an income represent an influential pressure group in countering local efforts to curtail immunization activities.

There were also reports of inappropriate interference in recruitment in Karachi.

On a more positive note, the community-based vaccination system that has become such an important element of the programme in Pakistan has continued its roll-out and is entirely managed through a third party that reports directly to the national EOC. Despite the low levels of pay, in many areas there seems to be no shortage of candidates for jobs in the CBV programme and in Quetta, for example, team members met with a number of very well-qualified female CHWs.

The third-party management of the CBV programme appears to ensure more transparent recruitment and management of community health workers, as well as of their supervisors and managers. The Afghanistan programme should consider the possibility of instituting a similar third-party arrangement, if a suitable organization can be found.

In Nigeria, inappropriate interference in the selection of workers in the programme was previously reported to have been an issue but programme management are confident that this has been addressed, including through the establishment of more transparent recruitment processes including the use of recruitment committees.

Finally, among UNICEF and WHO professional staff in Afghanistan and Pakistan there were complaints about interagency discrepancies in rates of pay for functions carrying similar levels of responsibility. In both countries, managers disputed this but since it is an issue that clearly has a bearing on the morale of staff, the review team recommended that transparent job classification processes be undertaken for the positions concerned.

5. Fatigue is a factor and cannot be denied

The most recent IMB report highlighted fatigue as one of the growing threats to the polio eradication effort. It was also a topic of discussion at the recent TAG meetings for Afghanistan and Pakistan where there was reluctance amongst some of those present to acknowledge the phenomenon. In Pakistan, one senior agency colleague suggested that even if the phenomenon exists, it is not a major concern because campaign coverage rates remain high. However, in their visits to Afghanistan and Pakistan, review team members found that there are very high levels of frustration over the never-ending cycle of campaigns and the constant 'knocks on the door'. This phenomenon was particularly evident in circumstances where the communities in question have essentially no access to basic services and is further discussed below. At a stage when the programme is seeking to reach the elusive final 5%, evidence on the ground would indicate that recognizing and addressing such fatigue is critical to the success of the programme and actions to address it must be prioritized.

In Pakistan, the intensity of the previous campaign schedule was described as a major contributing factor to growing frustration, even anger, on the part of communities at all locations visited, with these emotions cited as perhaps the true underlying cause of refusals and 'not available' children in many cases. One caregiver said, "Take my child, and bring him back when he's five years old and you have finished with him". The decision to move from a four-week to a six-week cycle in Pakistan is welcomed.

While the issue of community-level frustration was equally evident and well-recognized in Afghanistan, there appeared to be less willingness to acknowledge this as a compelling issue for consideration when developing campaign schedules. Despite the evidence of fatigue and an admission that campaign frequency makes it difficult to find the necessary time to address issues of quality between rounds, there seems to be some ambivalence regarding reductions in the frequency of such campaigns and a consequent sense of frustration among sub-national teams that their advice is not taken sufficiently into account.

6. Rumours and community perceptions

In addition to the general issue of community fatigue, there appears to be continued, even increasing mistrust in both Afghanistan and Pakistan, especially in security compromised areas. In Nigeria, whilst widespread suspicion of the vaccine was a major constraint in previous years, this seems to have been largely overcome.

In Afghanistan, there have been accusations that the polio programme serves as a 'Trojan Horse', enabling individuals involved in it to spy on behalf of Afghan and North Alliance Treaty Organization (NATO) forces. These suspicions have been fueled in recent months by a reported increase in well-

targeted attacks on key figures in AGE controlled areas. In recent months, bans imposed on house-to-house campaigns in Helmand, Uruzgan and parts of Kandahar were associated with rumours of this kind and suspicions as to how the campaign's use of maps, house marking, and enquires about 'guest children' might be part of such surveillance efforts.

The fact that approximately half of the Afghan population lives in areas that are under the control of AGEs, and that these areas include the highest priority districts for polio, make neutrality a particularly critical issue. Effective implementation of the programme requires the highest level of commitment on the part of government; government recognition and acceptance of the critical role of Taliban leadership in supporting eradication efforts in areas they control; and more effective efforts by Taliban leadership to ensure disciplined support and facilitation of polio campaigns by their commanders.

It is recommended that programme neutrality continues to be emphasized and communicated more effectively in Afghanistan. This includes 'unpacking' the concept of neutrality, with particular reference to the humanitarian principles of humanity, impartiality, neutrality, independence and universality.

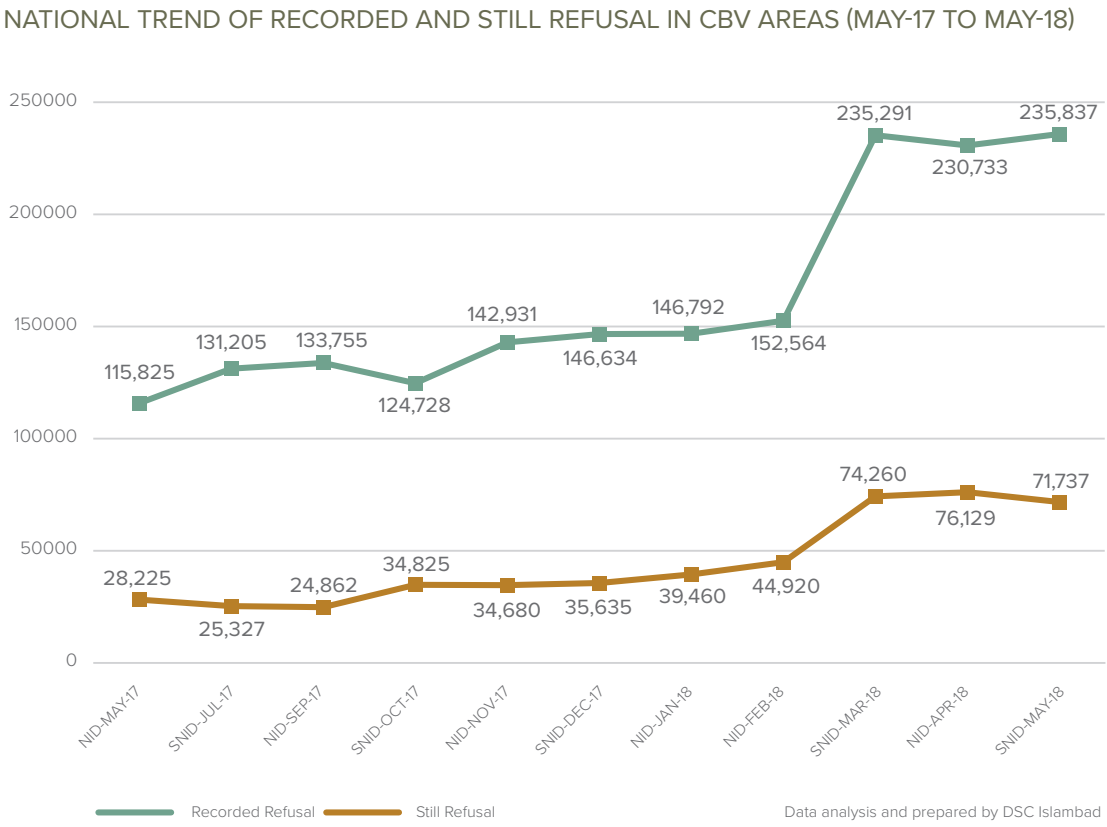
In all visited districts in Balochistan, community members consistently characterized the programme as being an international or 'American' rather than a Pakistan-owned and led initiative. Reference was made more than once to the Abbottabad incident and the use of vaccination campaigns to assist with the targeting of Osama bin Laden. Suspicion was expressed that the programme was designed to undermine Pakistani cultural values and the precepts of Islam. Rumours persist that the vaccine is "haram" and "harmful" to children. One interlocutor in Gulistan-II said that the vaccine would reduce the size of a child's heart to that of a rat, while others claimed that it provoked premature sexual activity and other misbehaviour. In other interactions, people commented on the reference to monkey kidney cells on the labelling of some of the vaccine vials.

In a conversation with an area supervisor in Balochistan who was asked how he responded to community concerns regarding the perceived lack of provision of other basic services by the Pakistan Government, he stated, "I tell them this is not a programme of the Pakistan Government, it is an international programme offered by Bill Gates".

It is important that international partners in Pakistan maintain a low profile, whilst the government continues to publicly assert ownership and leadership, profiling the programme as a national priority of the highest importance, emphasizing consistency of the aims and operations with Pakistani culture and religious beliefs, and enlisting the support of religious and other community leaders. Following this year's elections, the new Prime Minister of Pakistan should be encouraged to give maximum priority to this effort and to continue the remarkable progress in government leadership that has been evident since 2014.

In recent years, both Afghanistan and Pakistan have seen a dramatic rise in the use of smart phones and social media. This technology is increasingly used to disseminate misinformation and damaging rumours about the programme. For example, in March 2018, one locally made video from a district in Sindh went viral. It associated three deaths with adverse events following immunization (AEFI) after a measles campaign. The programme was slow to respond, taking four days to issue a press release. Recorded refusals during the subsequent polio campaign jumped by 54% nationally. In the following months, the programme was unable to overcome this trend. Even after concerted efforts to 'convert' the refusals, there was an increase of 65% of 'still refusals' over the month preceding the circulation of the video (see Figure 5). This incident has prompted the programme to develop a crisis communications strategy and team.

Figure 5: Spike in polio refusals following measles AEFI



Working with the Ministry of Health's routine immunization team, the polio programme in Pakistan formed a combined communication response team in preparation for the current measles campaign and is preparing joint training programmes and crisis communication protocols to minimize the impact in both polio and routine immunization of any potential AEFI's. Afghanistan also has an upcoming measles campaign and anything that can be shared should be shared now.

All three endemic countries place emphasis on the engagement of local leaders, including religious leaders, but while certain measures are in place (e.g. 'fatwa books'), the capacity of these individuals to adequately advocate on behalf of the programme should not be taken for granted and their training should be given greater priority.

7. Basic health and other services

"It is inhumane to constantly offer polio drops over and over to communities that have no food, no water and no medical care" - Senior official, Afghanistan.

The highest risk areas for the polio programme in Afghanistan, Nigeria and Pakistan are also amongst the poorest served when it comes to the provision of basic services including health care, nutrition, water and sanitation. This lack of provision of basic services has become a major source of frustration among the concerned communities. The never-ending rounds of polio vaccination and associated 'knocks on the door' serve to further fuel this frustration and stoke resentment towards campaigns, likely increasing the number of both 'soft' and 'hard' refusals. In Gulistan-II, Balochistan, as well as in Khyber Pakhtunkhwa's tribal areas it was suggested that community leaders may have begun to orchestrate mass refusals as a way of exerting pressure on government to address unmet needs for basic services. During their visit to Sindh, team members observed a complete lack of basic services in Machar Colony in Karachi's infamous Union Council 4 of Gadap town, which is considered to be one of the most resilient reservoirs of polio. With no access to clean water or any other basic necessities, the community is highly reluctant to cooperate with vaccinators month after month.

In Afghanistan, Pakistan and the North-East of Nigeria, the government and development partners should focus investments focus investments more intensively and more urgently in the highest priority districts for polio. Priority should be given to the areas of health, nutrition, water and sanitation. It is likely that this type of provision could be offered by targeting resources more deliberately, without the need to seek additional funding sources and could in some cases be directly linked with campaigns.

To greater and lesser degrees, this type of approach has already been implemented in the three endemic countries. The programmes are encouraged to increase such initiatives. Using polio as an entry point to address unmet health and other basic needs may help increase trust and overcome the growing frustration and anger that is evident in so many communities today.

Internally Displaced Persons Camp, Ngala, Borno, Nigeria

In Pakistan, at least some donors indicated that they are supportive of incorporating this type of coordination in country strategies that are currently under revision. In Afghanistan, the UNICEF Country Representative also indicated that it might be possible to redirect some existing resources in support of such efforts.

Nigeria is the one of the largest economies in sub-Saharan Africa but has one of the world's lowest per capita social spending levels. As a result, 65% of the approximately 200 million Nigerians live in extreme poverty. Nigerian health indicators are some of the worst in Africa and, although the Federal government has recently launched a national Primary Health Care Revitalization programme, much remains to be done.

North-East Nigeria, where four cases of WPV were discovered in 2016, is the location of one of the world's most challenging humanitarian crises due to the Boko Haram insurgency and extremely low levels of development in the region. Acute insecurity, protracted displacement, loss of income, and lack of agricultural production as a result of the conflict have left millions of people vulnerable. In

the North-East, residents of internally displaced persons (IDP) camps complained about inadequate access to food, sleeping mats, schooling and clothes for their children, clean water, soap and adequate sanitation. Coordination of what is a massive humanitarian effort is clearly a major challenge. In 'host' communities there were reports of families refusing polio vaccine in protest against the fact that they do not qualify for the sort of food assistance provided to IDPs. In Nigeria as a whole, the review team was concerned about what seemed to be the premature cessation of most 'polio-plus' activities.

8. Routine immunization

Whilst some progress has been made in recent years, routine immunization coverage in all three countries is unsatisfactory and, in many areas remains extremely low. In Dukki district in Balochistan, which reported three of Pakistan's 2018 cases, approximately 2% of children under two years old are reported to be fully immunized. In Nigeria, the Multiple Indicators Cluster Survey 2016-2017 (MICS), which so starkly contradicted the administrative data (33% vs 98%), has been embraced by government and has driven a clear recognition that the weakness of the system must be addressed as a matter of national priority including zero-tolerance for the falsification of data. In all three countries, the weakness of routine immunization systems was a frequently cited concern not only among health officials and polio partners, but also among representatives of the civil administration and community leaders.

The team found increasing collaboration between the polio programmes and routine immunization systems in all three countries, including support for micro-planning (e.g. for measles campaigns), social mobilization, sharing of data, and strengthening of supervision and accountability systems.

In Nigeria, the newly established National Emergency Routine Immunization Coordination Centre has been modelled after the national EOC for polio and the latter is providing ongoing mentoring and support to this new initiative.

In Pakistan, considerable human and financial resources are available and are judged to be sufficient to support routine immunization strengthening. However, comments were made that the main reason progress is slow is because of inadequate management and a lack of political will. More than one interlocutor suggested it would be helpful if the IMB were to call out the government on the deficiencies in its routine immunization system and lack of prioritization of such services in much the same manner as it did in regard to the polio programme in 2014.

The team felt that intensive focus on routine immunization strengthening is essential for all three countries, not only as a clear priority in its own right, but also as vital to sustaining the gains made in the eradication effort.

The review team suggests that given the significance of routine immunization in sustaining polio eradication (and addressing other vaccine preventable diseases), the government of Pakistan should consider bringing routine immunization and polio under one management structure at the national and sub-national levels. Current national polio EOC and sub-national EOC structures have demonstrated strong management capacity and ability to deliver services and these structures could potentially be utilized also to strengthen routine immunization service delivery and accountability.

9. Data collection, quality and use

In their efforts to improve quality, programmes in the three endemic countries keep reporting requirements and forms under review and make enormous investments in the collection of data. The resulting levels of granularity are impressive, as are the investments that have been made in the development of dashboards in all three countries and sophisticated control rooms such as the one in the Pakistan national EOC. In Balochistan, during the July campaign, team members observed over a dozen data specialists working together to immediately enter the data that had been collected during that day's campaign activities.

In Afghanistan, every single vaccination refusal in high priority districts is tracked campaign-by-campaign, with full details of the children concerned, their parents, and the reasons for refusals as understood and categorized by the vaccination teams. Whilst admirable in principle, the collection and tabulation of so much data places an enormous burden on programme staff. The burden is particularly heavy for frontline workers and the fact that many of these frontline workers are illiterate or have very limited education, poses a significant challenge. In Pakistan, the micro-census book carried house-to-house by the community health workers weighs at least two kilograms.

One example of the burden created by data collection requirements concerned the tally sheet in Afghanistan which has become very complicated. It was commented that each time the tally sheet is updated "A new column is added and a new training is required". After reviewing the latest version, one team member joked that it "almost requires a PhD level of education … and a magnifying glass!". These constant updates lead to a level of complexity that appears inadequately to recognize the challenges involved in field level implementation.

Staff at the sub-national level complained about demands from national EOCs and core teams at the national EOCs complained about the demands placed upon them from the various bodies at global level with which they are required to interact. For example, one senior partner officer in Afghanistan stated, *"Doing routine things, like some basic analyses that have been done for the past 20 years for every campaign, has wasted a lot of time for our staff. We have very limited time to focus on the quality of the campaigns. Sometimes, we focus time on some things that we think are not necessary for the programme"*.

The review team observed that there may be complacency over the quality and validity of data. In Afghanistan and Pakistan, programmes may be collecting too much data, particularly as there is insufficient time or capacity to actually analyze and use these data effectively to improve the quality of operations. As one senior programme officer in Pakistan said, *"We collect a ton of data, and sometimes we don't use it, nor does it trigger activities. We do not use it to its full potential and we are currently undertaking an assessment of what is relevant and what we really need"*. This issue was perceived to be less of a problem in Nigeria.

10. Cross border integration

Recognizing that Afghanistan and Pakistan represent one epidemiological block for polio, the two countries are emphasizing coordinated planning of activities across the 2,430-kilometre border (for example, timing of Supplementary Immunization Activities (SIAs), use of common communication materials at the border, among other initiatives), with the development of the northern, central and southern 'corridor' plans. The most recent iteration of these plans involved a bottom-up process that brought the two teams together in Abu Dhabi and this approach was applauded by the review team. Nevertheless, it appeared that further progress could still be made from 'coordination' towards a situation in which the cross-border programme is conceived, designed and implemented in a truly integrated, seamless manner.

Furthermore, while efforts are made to exchange analysis and learning across the border there is obvious scope to increase such efforts particularly to enable Afghanistan to benefit from some of the approaches that have been developed in Pakistan and Nigeria. For example, the Pakistan programme conducted a communications review in 2018 and it was a missed opportunity that no staff from Afghanistan participated.

The review team noted increasing challenges faced by Afghanistan and Pakistan in regard to the role of social and mass media, as well as local influencers, in spreading false and damaging rumours about polio. The teams on both sides of the border recognized this phenomenon, but Pakistan appears to have come further in developing plans to establish crisis communications capacity and protocols, both to anticipate such disruption and also rapidly to address it when it occurs. Furthermore, there are examples of interventions undertaken by Pakistan to counter media attacks on polio by having the authorities block transmissions by hostile radio stations. At the same time, in the East of Afghanistan, the programme is reporting intensive propaganda and violent threats against polio workers by multiple radio stations controlled by AGEs including DAESH. Other than the conventional purchase of broadcast time for short radio spots, there was no evidence of any further steps to suppress the hostile broadcasts themselves and these broadcasts are being picked up in adjacent areas of Pakistan to the detriment of the programme on that side of the border.

Overall, if planning, operational coordination and learning across the two country programmes is so critical and even if they do meet together from time to time, the review team suggests more formal coordination between the two national TAGs. Another area for increased collaboration would be to take advantage of opportunities provided by reviews and trainings across the two programmes, involving key staff in addition to senior leadership.

In Nigeria, the review team made considerable efforts to understand the nature and extent of cross border movement and the associated risk of exportation of the virus. In the North-East, the team was informed that cross border movement (primarily to and from Cameroon and Niger) is limited, however daily movement (as opposed to migration) appeared to be ignored. The team was partially reassured to learn about the establishment in 2017 of the Lake Chad Coordination Task Team and TAG and believe that the effective functioning of these mechanisms should remain as a high priority. It would be good to see further analysis of cross border movement and movement between the North-East and other parts of the country.

11. High-risk mobile populations

Afghanistan and Pakistan are making efforts to address the threat posed by high-risk mobile populations including those who move across the shared border. Multiple strategies to vaccinate these populations include Permanent Transit Points and other teams at key border crossings, along commonly used routes, and at railway and bus stations. Some of the most critical of these are at transit points between areas of government control and inaccessible areas under the control of DAESH in the East of Afghanistan. Other strategies include targeted vaccination of high-risk mobile groups in special mop-up SIAs and modifications to micro-planning tools for house-to-house campaigns, including greater emphasis on identifying ‘guest’ children (though this has proven somewhat sensitive in Afghanistan in areas with a strong Taliban presence, where any such information gathering is treated with suspicion).

The review team felt that activities in both countries aimed at reaching high-risk mobile populations are well informed by detailed analyses of movement patterns, although in both countries there is the ever-present possibility of unforeseen movements caused by conflict (especially in Afghanistan) and/or other events such as the current drought. Furthermore, a continued emphasis should be placed on intercepting children on the move rather than waiting until they arrive at their destinations. Refusals among these mobile populations do not seem to pose a major issue.

Pakistan has broken down its analysis of high-risk mobile populations into multiple groups (nomads, seasonal migrants, brick kiln workers, agricultural migrant labour, other vulnerable economic migrants, displaced populations (internally-displaced, Afghan refugees, or returnees) and guests

(both from within Pakistan and from Afghanistan). The biggest perceived risk is cross border movement from Afghanistan and it is on this that principal efforts appear to be focused.

Genetic sequencing would suggest that while this emphasis is critical, internal movement, particularly in and out of Karachi, must also be prioritized. The review team was prompted to question whether the focus on Afghanistan may sometimes be at the cost of a reduced emphasis on internal movement of Pakistanis within and between high-risk areas domestically. As an example, review team members observed that while vehicles traveling from Balochistan to Sindh were being stopped at Permanent Transit Points vehicles traveling in the other direction were not. Furthermore, there do not seem to be solid plans to target children on the move within large urban centres during campaign days. One example is Karachi, where tens of thousands of children may be on the road during the five days of the campaigns and away from their homes when teams visit.

Afghanistan's classification of high-risk mobile populations is simpler and appears to comprise just four groups (long distance travelers within the reservoir areas, straddling populations along the bordering areas, nomadic populations and returnee refugees).

The review team noted a tendency for Afghanistan and Pakistan to each blame the other for virus circulation in their countries and would like to emphasize the need for each to focus on establishing the highest possible levels of immunity within their own country, thereby, reducing the danger of importation. One senior government official suggested that polio is a 'long-distance swimmer' and it must be floating down the river into the East of Afghanistan from Pakistan or that Pakistanis are defecating in Afghan sewers.

12. Finance

Afghanistan has a total 2018 budget of USD 90 million and a target population of 9.9 million under-five children; in Pakistan the budget is USD 230 million, and the target population is 38.4 million under-five children; and in Nigeria the budget is USD 187 mission, with a target population of 36 million under-five children. This translates into a cost per child per annum of approximately $9 in Afghanistan, $6 in Pakistan and $5 in Nigeria. This discrepancy may be partly attributed to economies of scale in Pakistan and Nigeria and the higher costs of operating in an extremely insecure environment such as Afghanistan, but it is a discrepancy that may warrant further analysis.

In commenting on the size of the budget in Pakistan, the national EOC coordinator remarked that it is better for the GPEI to provide sufficient resources now, rather than prematurely seeking cost-cutting measures potentially extending the time it will take to interrupt transmission. The review team agreed with this position and did not identify any obvious areas in any of the three countries visited where cuts in the budget could or should be made. In the course of its country visits, the team was

concerned to hear of pressure coming from within the GPEI to reduce budgets in Afghanistan and Pakistan by 12.5%, and up to 15-20% in Nigeria and believes that this is not the time to be imposing such apparently arbitrary constraints. It is imperative that the needs of the programme to eradicate polio drive the budget, not the other way around.

In Afghanistan, one identified area of financial risk involves payments to frontline workers, but following examples in both Pakistan and Nigeria, a new direct disbursement mechanism (DDM) is being put into place to address this. The cost of operating the DDM systems is high (expected to be around USD 500,000 per National Immunization Day campaign, which equates to around an additional USD 5 million per year in Afghanistan) but it is considered a worthwhile investment for frontline workers who will now be protected against diversion of funds by individuals at higher levels. One possible downside of the introduction of these more transparent DDMs is that it may have a demotivating effect on supervisors and others who previously benefited from opportunities for corruption, including by withholding part of the payments due to their supervisees and/or claiming funds for 'ghost vaccinators'.

Overall, the review team was not made aware of any major issues regarding diversion of programme funds in any of the three countries and believes that financial systems and controls are broadly sufficient to ensure sound financial management despite the challenging operating conditions.

13. Transition

Review team members are unanimous in recommending that it may be premature to distract colleagues in the three endemic countries from what should be a singular focus on interrupting transmission and helping to strengthen weak routine immunization systems.

During the Afghanistan mission, an important meeting was curtailed because the team's interlocutors were "forced" to attend a discussion on polio transition planning. This is just one example of a contradictory approach within the GPEI: on the one hand "be innovative and focus on eradication", whilst at the same time "begin to cut down your budget and start to talk about transition".

This having been said, it is clear that the polio programme has been able to build up considerable capacity in all three countries that could potentially be used to the benefit of other development interventions including particularity health and, more specifically, routine immunization.
In Afghanistan, support to routine immunization by the polio programme is expanding and includes monitoring, assistance with micro-planning and reinforcing the supervision of both fixed and outreach sessions. The Immunization Communications Network (ICN) is also assisting with the identification and referral of defaulter children.

In Nigeria, the government has developed a transition plan for the period of 2018-2022, which focuses on eight strategic pillars: improved routine immunization, enhanced disease surveillance, outbreak and emergency response; primary health care revitalization including CHIPS, strategic and management commitments; innovative financing and resource mobilization; human resources; physical assets (seven EOCs and laboratories); and monitoring and evaluation, including continuous quality improvement and supervision. The review team welcomed the fact that the Government of Nigeria has already taken steps to flesh out its transition strategy but also cautioned that one size does not fit all, and that the pace of transition should be tailored to the circumstances prevailing in each state (e.g. Borno, Yobe and Adamawa are not early candidates for transition).

14. Civil-military coordination

The programme's ability to operate in Southern Afghanistan is highly dependent on its ability to maintain a credible profile as a neutral actor operating independently of military and political stakeholders in the ongoing conflict. This is currently challenging in light of rumours and fake narratives. In Pakistan, areas that were previously closed to the programme were reopened thanks to intensive military operations and while the number of fatal attacks on polio workers has reduced, significant threats remain and the programme still relies heavily on the army, police and local militias to provide protection for campaign activities. In Nigeria, operations in the North-East are coordinated with the Civilian Joint Task Force and the military, to the extent that they are trained to administer polio vaccine in insecure and inaccessible areas respectively. At the same time, Boko Haram, the Military and the Civilian Joint Task Force have all been accused of human rights abuses. These relationships require very careful consideration and handling to keep the programme from becoming associated with anti-insurgency activities and therefore becoming a target, and to ensure that the programme operates within humanitarian and ethical principles. This includes the appropriate sensitization of field level workers who maintain day-to-day relationships on the ground.

F. AFGHANISTAN

1. Operating environment

Afghanistan today represents the epicentre of the global polio eradication effort; if the programme fails in Afghanistan then it will have failed globally. At the same time, Afghanistan is one of the most challenging operating environments in the world. The country has been plagued by a series of conflicts since the 1970's and levels of insecurity today are as high as they have been in many years. Conflict is a major driver of population movement both internally and across the country's borders, as are adverse climatic conditions such as the current drought. Apart from the urban centres, most of the country is now effectively outside of the government's control. Since the mission, the situation appears to have deteriorated further, including with additional attacks in Kabul itself and the temporary seizure of Ghazni.

Afghanistan ranks 169 out of 188 countries on the Human Development Index[1] and is near or at the bottom of virtually every development indicator including nutrition, infant mortality, life expectancy and literacy. Afghanistan has a Multidimensional Poverty Index of 0.353, the lowest in South-Asia, with 66% of people considered to be multidimensionally poor and 37.7% reported to be destitute (2015)[2]. Afghanistan is socially highly conservative, and the status of women is low; this adds considerable challenges to the task of reaching children with vaccine at their homes, including because of the difficulty of engaging women as frontline workers.

Since 1992, Afghanistan has ranked as the world's largest producer of opium and despite concerted efforts in recent years, production continues to increase, with a dramatic spike in cultivation of 63% between 2016 and 2017 alone. Poppy production was estimated to be worth between $4.1 and $6.6 billion in 2017, or between 20% and 32% of Gross Domestic Product (GDP). The value of the opiate-based economy far exceeded the value of Afghanistan's legal exports of goods and services during 2016[3]. As well as providing an income for farmers in substantial areas of the country, poppy production and trafficking are reported to have increased funding to terrorist groups and fueled political instability and public corruption. Transparency International ranks Afghanistan at the bottom of its Corruption Perceptions Index (177/180)[4].

There appears to be no immediate prospect of a decline in hostilities and insecurity. In addition, there are two elections in the coming year. Parliamentary elections are planned for December 2018, followed by Presidential elections scheduled for the first quarter of 2019. These may further complicate both governance and security dynamics.

[1] United Nations Development Progamme (2014) Human Development Index and its components [Accessed 25/07/2018] [Available at: http://hdr.undp.org/en/composite/HDI]
[2] University Oxford Poverty & Human Development Initiative (2016) [Accessed 2/09/2018][Available at: https://www.ophi.org.uk/wp-content/uploads/MPI2016-SOUTH-ASIA-HIGHLIGHTS_June.pdf]
[3] United Nations Office on Drugs and Crime (May 2018) Afghanistan opium survey 2017: Challenges to sustainable development, peace and security [Accessed 25/07/2018] [Available at: h]ttps://www.unodc.org/documents/crop-monitoring/Afghanistan/Opium-survey-peace-security-web.pdf]
[4] Transparency International (2017). Corruption Perceptions Index. [Accessed 25/07/2018][Available at: https://www.transparency.org/news/feature/corruption_perceptions_index_2017]

It is in this environment that the GPEI is striving to halt transmission of the poliovirus. The utmost respect must go to all those involved in this effort for their continued dedication and determination in spite of the enormous challenges they face every day.

2. Access and security

Until May 2018, considerable success had been achieved in maintaining access for SIAs across the country, including in the highest priority districts. May 2018 saw a major reversal in Helmand as well as parts of Uruzgan and Kandahar, with a combined estimate of one million children missed during that month's campaign. There were slight improvements in July, but overall access deteriorated again in the August round, when the number of inaccessible children rose to 1.3 million. Areas where access was denied included Shawalikot district which has been declared the epicentre of the outbreak in the South.

It appears that obstacles to access have somewhat changed in recent years. In the past, they were relatively ad-hoc, more localized, and often related to management issues within the programme itself (for example: team selection, perceived corruption and so forth), community grievances, local disputes, or negative attitudes towards the campaign by individual community or Taliban leaders. Whilst similar obstacles still occur today, there seems to have been an increase in more organized and geographically widespread bans that are communicated in advance and often are not subject to the kind of local resolution that mostly worked in previous years. Recourse to negotiation, through intermediaries, with AGE 'health commissioners' continues, though it appears that such engagement has become less effective as AGE military commanders have asserted greater control.

As far as possible, the initial response to any access limitation is still reported to be at the local level, using agents acting on behalf of the programme to engage with local leaders and influencers to try first to understand the reasons behind the constraints and then to negotiate local solutions. The review team supports this approach and cautions that any premature escalation of negotiation efforts beyond the local level might run the risk of having the programme 'held hostage' by exposing it to political pressure and/or demands for services or other benefits emanating from more senior AGE leadership.

Furthermore, negotiation at the higher levels of the AGE hierarchy may not necessarily overcome the resistance of 'shadow Governors', local commanders, or community leaders. Given the increasing fragmentation of the Taliban movement and the lack of effective systems of command and control, these latter actors may refuse to accept the authority, or the dictates of leadership elements based elsewhere. This situation seems to be prevalent in the South and is exemplified by the assertion of authority by powerful individuals there, and in the East by the emergence of new AGE actors including DAESH (currently with presence in several Districts), and radical Afghan Taliban splinter groups. It is not possible to negotiate these groups and it is hardly surprising that fear for their

personal safety prevents local cluster supervisors from reporting the presence and numbers of these groups in their areas.

The review team was particularly concerned by the deteriorating situation in the Eastern Region of Afghanistan. For example, in Kunar and Nangahar provinces which have always been problematic, the number of inaccessible children has more than doubled, from 23,000 to 55,000 since January 2018. Access negotiations seem to be even more complicated than in the South, in part because of the difficulty in simply finding someone to talk with.

Access to the field in the East is severely restricted and the majority of national staff and contractors have received credible threats and warnings. There is a pervasive climate of fear, leading to some workers having left the programme.

In areas of chronic inaccessibility, the programme is using Permanent Transit Teams, health camps and other interventions aimed at providing opportunities for immunization. It is also creating 'firewalls' to capture children moving out of AGE controlled areas where access is denied, but the challenges are both daunting and increasing. Furthermore, under the prevailing circumstances, direct monitoring of activities and data verification are severely constrained. Given the 'fear factor' and limitations to access, the validity of these data must be questioned and some are clearly implausible in light of access limitations and the apparent epidemiology of the virus. Given the deteriorating access and security situation in the East of Afghanistan, reported campaign coverage rates of 95% in areas that cannot be visited simply defy common sense.

One senior interlocutor told the team "we have hit a wall" but there was no evidence that the programme has a 'plan B', either for the South or for the East.

In the South, AGEs have proposed that the programme drop some of the more contentious aspects of its methodology and adopt a 'mosque-to-mosque' approach, but both the programme and the TAG have rejected such compromises as falling short of the "gold standard" of house-to-house campaigns. This stands in contrast to the programme in Borno, Nigeria, which has displayed flexibility and speed in consulting with local community leaders and influencers to exploit opportunities to access highly insecure areas by adopting campaign approaches that eschew the need for conventional elements that may provoke suspicion or resistance. Using their network of community informants, programme staff in Borno in Guzamala, Kukawa, and Monguno Local Government Areas (LGAs) have reached out to community leaders and agreed on low visibility, community organized and implemented activities that have excluded some of the more sensitive aspects of orthodox campaigns but have succeeded in reaching children with vaccine which is, after all, the principal objective.

In summary, interruption of access and limitations placed upon operational strategies stand as the biggest obstacle for further progress in Afghanistan.

Over the past several years the programme has evolved a fairly elaborate system for the routine analysis of access issues, with the assistance of well-qualified third parties:

- proposed solutions are identified on a case by case basis;
- there is an appropriate emphasis on resolution at the local level wherever possible; and
- where local resolution cannot be achieved, issues are referred to the national level where the programme has dedicated resources for further analysis and outreach. If these efforts also fail, there are further avenues for negotiation at more senior levels of the AGE structures including internationally.

However, at the sub-national level, there seemed to be a disconnect between UNICEF and WHO as to how these existing processes are managed, as well as some lack of clarity over delegated authority to trigger negotiations and initiate local action. One WHO senior officer in charge of a very large inaccessible area stated, *"We should have a well-defined process for defining different types of inaccessibility around the country … and then we can have a refined strategy for dealing with each type"*. UNICEF colleague then explained that exactly such a mechanism does already exist.

Ensuring a coherent and effective process for addressing access issues is a key requirement for the programme and it is important to keep existing systems under constant review in light of what is an ever-more complex, ever-changing and volatile environment.

Overall, the programme appears to be slow to adapt to evolving access and security challenges, particularly when these may require changes in previous core strategies. Limited contingency planning seems to have occurred; what if the ban on house-to-house campaigns in Helmand is not lifted, despite ongoing negotiations? There is no 'Plan B'.

The programme should continue to explore innovative community engagement strategies and the potential role of local leaders, including if the impasse on house-to-house campaigns continues or expands. Options could include staggering campaigns in high-risk areas, making them less visible, or 'hit and run' campaigns allowing the programme to concentrate the best human resources in smaller geographic areas to obtain the highest coverage (this might also be for consideration in high-risk areas in Pakistan) or negotiating 'Days of Tranquility'. No option, including mosque-to-mosque campaigns, should be rejected on doctrinaire grounds or without considering the possibility of negotiation.

3. Government ownership and leadership

In its May 2018 report, the IMB expressed appreciation for increased levels of commitment and leadership from the Government of Afghanistan. It is clear from the history of the GPEI that without such commitment and leadership, and unless such commitment can be translated into effective action, the goals of the programme will remain out of reach.

In all of its public expressions, the government continues to emphasize its prioritization of the polio eradication effort and the review team heard such expressions not only in Kabul, but from senior officials at the sub-national level too. Nevertheless, the review team left the country concerned that the structure the government has created to translate its commitment into effective leadership on a day-to-day basis is overcomplicated and less efficient than it needs to be. This structure is characterized by a number of different, and seemingly competing, poles of influence and authority over the programme.

Formally, the programme falls under the authority of the Minister of Public Health, who is supported by a senior advisor, is a veteran in the field of public health and evidently wields considerable influence. In addition, there is an advisor to the President, a role that was created some years ago at the urging of the donor community and some GPEI members. This advisor is supported by his own small secretariat. A more recent addition to the structure, is the national EOC and the review team was very impressed by the technical competence and honest commitment of the EOC Director who was in place at the time of its visit.

At the time of the team's visit, it appeared that some donors were focusing on the work of the Director and his team at the national EOC. They were also reflecting on alternative modalities for the implementation of the programme, including advocating for an expanded role for Basic Package of Health Services (BPHS) implementing organizations. The review team was concerned on both counts.

The removal of the EOC Director subsequent to the team's visit has given rise to even greater concern. The team believes that this change, and the manner in which it was done, is potentially highly disruptive to the programme. Whilst it is understandable that partners and donors may be frustrated over the delay in eradication, they are urged to remain patient and to refrain from pushing for any radical changes to current operational modalities which, in the opinion of the review team, would represent a very high-risk move at this moment.

In terms of the effective leadership of the programme, the overall result of what is described above amounts to a degree of complication and a lack of coherence, common vision and unified leadership that are potentially damaging.

The government polio structure in Afghanistan must be further refined and simplified, with transparent and disciplined allocation of responsibilities, a more effective and stable chain of command and an accountability framework that is respected by all. There needs be a single, fully-empowered leader who is intimately familiar with the detailed real-time dynamics of the programme. This leader must be able to embody the vision, urgency and drive that are necessary to achieve polio eradication.

In spite of his many other responsibilities, there seems to be no other option than that primary responsibility and accountability for the polio programme should continue to lie with the Minister of Public Health, reporting to the President through his/her role as a Cabinet Member and, through the work of the Cabinet, helping ensure an 'all-of-government' approach to the polio effort. Reports and proposals on the status of the polio programme should be a regular item on the formal Cabinet agenda, including both before and after each campaign.

The role of the Presidential Advisor should be advisory only and supportive of the role of the Minister as well as of the overall leadership of the President himself. Apart from a minimum degree of executive support, the office of the Presidential Advisor should have no separate technical capacity and should rely instead on the information and analysis that flow from the national EOC. The official status of the national EOC needs to be clarified, including as reporting directly to the Minister of Public Health, and whilst the Minister may choose to retain a senior advisor, this role should not be allowed to cut across the direct reporting line between the national EOC Director and the Minister.

The review team was pleased to be able to visit the sub-national EOCs in Kandahar and Jalalabad and would urge the programme to continue to develop these as full-fledged operational control centres, rather than just meeting places. In their visits to the sub-national EOCs, staff of the national

EOC need to make greater efforts to familiarize themselves with field realities and operations and spend less time in the sub-national offices themselves, where they are said to focus mostly on data issues. Requests from the national EOC for data and analysis should also be streamlined, to reduce demands on the sub-national teams. In Jalalabad, efforts should be made to foster healthier team dynamics in which the open sharing of challenges and constraints by all stakeholders informs strategies with the most realistic possible understanding of rapidly changing security and access dynamics.

Whilst innovation is encouraged, there was an impression at the sub-national level of a proliferation of dictates flowing from Kabul. Furthermore, there was a sense that innovations tend to flow in a top-down manner and that it is difficult to get a hearing for proposals from the bottom-up. One of the specific concerns in this regard is an apparent sense of disempowerment among senior sub-national level colleagues who are best placed to understand and make judgements as to field realities. The review team felt that greater emphasis needs to be placed on enabling sub-national staff to share their perspectives and recommendations with national-level decision makers.

Finally, while the forthcoming elections have previously been cited as a potential challenge to the programme from a security perspective, they also represent an important opportunity for incoming parliamentarians and the eventual new government to reassert polio eradication as a national priority.

4. Programme functioning

The overall impression of the review team was that the eradication programme in Afghanistan does not feel like an ‘emergency’. This is not to say that people are not working hard, that there are not huge quantities of data being gathered or processed, or that there are not incremental efforts being made to improve the quality of operations. It is more that there is no all-pervasive sense of urgency and no sense that imminent challenges are sufficiently dominating the attention of managers at all levels. There was a prevailing impression that managers were not focused on self-critical discussion of the substance of the programme. The team found it difficult to elicit any frank reflections on threats, or areas where improvements may be needed.

a. Supplementary Immunization Activities

In recent years, the programme has pursued a highly ambitious SIA schedule with limited time in between rounds to conduct in-depth reviews and make adjustments to campaign tactics, including in response to the evolving security situation. The review team was particularly concerned that while monumental efforts are being made to collect ever-more detailed data there doesn’t seem to be

the time or capacity to fully use these data to improve the quality of SIAs. Pakistan is currently in the process of reviewing its data collection priorities (particularity social data) and the team recommends that the Afghanistan team does the same and focuses its efforts on what is truly essential to improve operational quality.

Although advice on this issue is the primary responsibility of the TAG, the issue of campaign frequency remained an important topic for discussion during the review team's visit to Afghanistan. It was interesting to note that while international partners appeared less concerned with what has been the traditionally intensive campaign schedule, sub-national government authorities and ground-level workers were more outspoken in expressing concerns. The review team believes that greater attention should be paid to such local views.

In Kandahar, members of the review team met with a number of mothers and other community representatives who expressed considerable frustration over the fact that effectively all they were offered by government were polio drops, while they are struggling to survive in communities with limited access to essential services. In Loya Walla District, which represents a major engine for the circulation of poliovirus in Southern Afghanistan and is closely linked with Shawalikot (location of eight polio cases between June 2017 and April 2018), there is no form of public water supply, sanitation, or garbage disposal. In the course of a visit to the local NGO-run Basic Health Unit, team members were informed that 60% of children presenting at the clinic were suffering from diarrhoea. A woman in the same district which saw its most recent case of polio in 2017 expressed frustration over a complete lack of public services and said, "Thank you for listening to me about things beyond polio".

The environmental sample collection site in Loya Walla

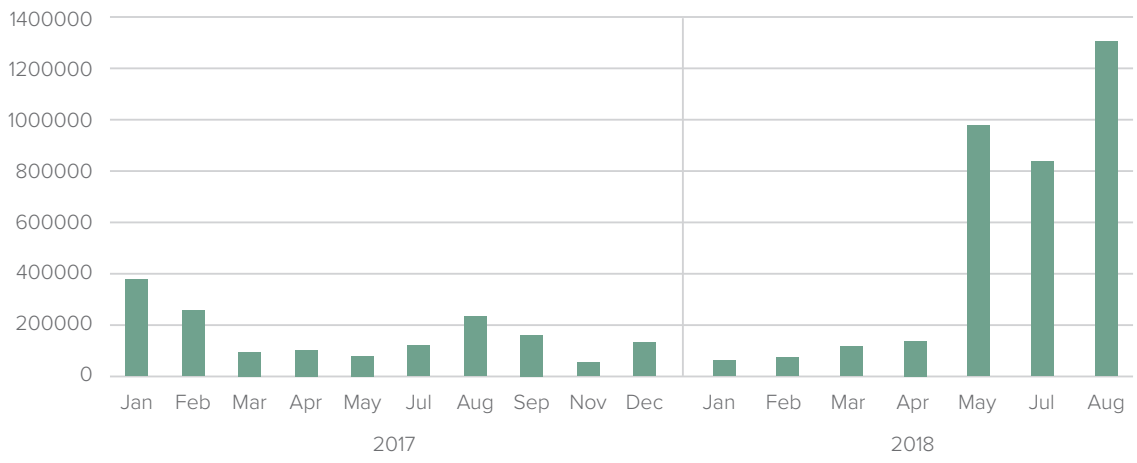
Team members were troubled by the conditions in which communities in some of polio's highest priority districts in Afghanistan were raising their children, in the absence of the most basic amenities. In Southern Afghanistan, they were also struck by the way in which the use of such development funding as continues to be available is being prioritized by the international community and by the Government of Afghanistan. While so many local people continue to lack even the most basic of services, international funding is currently supporting construction of an eight-lane highway and associated service roads between Kandahar and the border with Pakistan at Spin Boldak.

b. Missed children and refusals

Available data suggest the predominant reasons for missed children are 'not available' and 'refusals'. Within ICN areas, frontline workers track these missed children pre-, during- and post-campaigns. Some of these workers are part-time, as certain areas do not allow full-time mobilizers. For example, in the South, part-time ICN mobilizers work for just a couple of days prior to the campaign and one day after. On average, 60% of 'absent' children are covered in the ICN catch-up week. The remaining 40% are still 'not available'. For the refusals, around 20% are caught by the ICN catch up. The great majority of children being missed in the South are those living in inaccessible areas, those in areas where there are constraints on campaign quality and those who refuse vaccination. The East has a similar picture.

Children missed are analyzed by district and by cluster. The number of children not vaccinated had steadily reduced over 2017 and up to May 2018. However, in May 2018 bans resulted in a million children being missed and it has subsequently proven impossible effectively to address this (see Figure 6). Numerically the problem has been particularly acute in the South.

Figure 6: Inaccessible children in Afghanistan



In the East, this translates to a large population immunity gap and a population that is probably harbouring transmission in the northern corridor, as evidenced by the recent case in Kunar. Some of the population in question have almost certainly moved out of these areas, fleeing DAESH, however the exact numbers are unknown. Despite reported confidence in cross-border coordination, the programme in Afghanistan does not know exactly what is happening in neighboring areas of Pakistan. This information gap should be addressed by the Northern Corridor Action Plan, with the aim to map the area and analyze the extent of missed populations. When looking at cases from the northern corridor, it is evident that they are closely linked to the traditional movement of local tribal groups. During the cross-border meeting between Afghanistan and Pakistan in Abu Dhabi (28-29 March), the importance of the Swat area, Bajour, Mohamand Agency were discussed. All of these areas need to have a further disaggregated analysis of population movement and coverage rates.

Review team members familiar with the country noted that there seems to be an increasing trend in refusals in Kandahar, but a very insignificant number of refusals elsewhere.

One member commented, “Afghanistan, traditionally, hasn’t had a culture of refusal, they usually have had a very high rate of acceptance. In the past, we would have women asking for their newborn babies to be vaccinated, even before the baby had been washed”. This member noted that things seem to have changed over the years, with some current refusals in the East, linked to communities that are not Afghans. The example of Bermel was cited, which has people from the Mehsud and Waziri tribes. High population movement is an important trend, resulting in areas with very mixed populations, including many Kandahari’s living in Pakistan. Tehrik-i-Taliban Pakistan affiliated operatives and their families, originating from Swat district of Pakistan, are residing in certain districts of Kunar province and have adamantly refused polio immunization for the past five or more years.

One senior WHO colleague noted that, “We are trying to dig deeper to understand the reasons for refusals (including through the use of the refusal tracking sheet), but post-campaign monitoring data simply group reasons as ‘misconception’, ‘haram’, and so on, and we need to know what this really means”. This is very important.

Overall, the programme has a lot of faith in the reliability of data, feeling that the verification and checking process is robust, but some reservations were expressed that in spite of the efforts to ensure the best possible quality of monitoring, the system is not where it should be, and it is particularly likely that some data are unreliable in areas where access and security are compromised. These doubts were more openly expressed by government and partner representatives at the sub-national level than they were in Kabul.

c. Monitoring and Evaluation

The programme has established elaborate and multi-layered monitoring systems including the use of third party monitoring and other quality-control mechanisms. These include dashboards to monitor pre-campaign, intra-campaign and post-campaign activities, plus the use of lot quality assurance sampling (LQAS), post-campaign monitoring and remote monitoring to enable assessments of campaign quality. The review team was particularly impressed by the innovation in devising the remote monitoring system.

The investment is enormous but, given the nature of the operating environment, so are the challenges involved in ensuring the quality of the data generated, as well as the time and capacity to analyze these data and use them effectively in the improvement of campaign quality. As the programme approaches its final goal, considerable granularity of analysis is required, particularly in very high-risk districts (VHRDs), and/or in areas where large numbers are being missed by campaigns or refusing the vaccine. However, a balance is needed to avoid overburdening the programme with data and maintain a focus on problem-solving and outcomes.

Perhaps inevitably, the review team heard concerns over the falsification of data including by those third parties engaged to provide checks on quality.

The monitoring systems and tools are so comprehensive that it would be difficult to suggest anything additional. Indeed, the only real question is whether there may be an excess of data collection activities and it is recommended that the programme should keep its requirements and activities under review to ensure it is focused on gathering data that are used to improve programme quality. In addition, it is important to continue efforts to ensure the quality of data collected as a key point of accountability at all levels. Finally, as the IMB has previously noted, there may also be a danger of placing excessive reliance on LQAS which cannot be regarded as a ‘gold standard’ when it comes to seeking reliable indicators of coverage.

5. Human resources

Within its very large workforce, the programme is fortunate to have so many individuals who have served it with courage and dedication for many years. The hard work and determination displayed by the overwhelming majority of staff in the face of such enormous challenges have been previously noted.

This having been said, concerns are regularly expressed that the hiring of programme personnel is not always competency-based or transparent and may be subject to manipulation based on considerations other than the best interests of the programme. There are reports of inappropriate interference by officials and local influencers in the hiring of frontline workers, district staff and cluster supervisors. This is said to occur in both regions visited by the teams, as well as in both Taliban

and Government controlled areas, primarily at district level and below. In the East, it was reported that up to 40% of programme personnel may have been hired on the basis of such inappropriate pressure. Partner staff reported that if they do not comply with hiring requests, they will be subject to harassment and threats.

Efforts are being made to ensure more objective and transparent recruitment through the formation of hiring committees with representation from NGOs, UNICEF, WHO and government authorities at all levels. The suggestion has been made elsewhere in the current report that if they can be found, the Afghanistan programme consider engaging a third party to help meet and manage its human resource requirements, as has been done in the case of the CBV and VCM programmes in Pakistan and Nigeria respectively.

The issue of ensuring objective and ethical recruitment of personnel is sufficiently critical to the success of the programme that it should be a matter for the direct attention of the UNICEF and WHO country representatives, including as part of their engagement with government at the highest levels. The review team was encouraged to hear that Afghanistan's President himself has recently issued strict instructions that inappropriate interference in personnel matters by any government official or elected representative will not be tolerated.

Once personnel are in place, it is essential to ensure that their performance is closely monitored. Mechanisms are needed to ensure that good performance is recognized and rewarded and that poor performance including, for example, financial impropriety, reporting false data or untimely reporting of critical programme indicators is swiftly dealt with. In the South of Afghanistan, for example, it has proven possible to take action to remove district level staff who have been involved in malpractice; this has been accomplished with the support of the Director of Public Health.

Finally, the senior management of the programme should ensure that 'whistleblowers' among national and international staff and contractors are encouraged and protected in the reporting of shortfalls in, or threats to, the programme.

6. Communications

Early in 2018, a detailed review of the polio communications programme in Pakistan was conducted by a team of external consultants. This review considered the programme's use of social materials and tools, observed field operations and conducted interviews with public health officials, caregivers and frontline workers. It considered the interpersonal communication skills of frontline workers; the monitoring and evaluation of communication and social mobilization activities; communication strategies to reach high-risk groups, including mobile populations; and the role of mass media and the Information, Education and Communication approach.

The original plan was to have a similar review undertaken in Afghanistan, and the team was

disappointed to learn that no such review took place. It is strongly recommended that the communications review be rescheduled in Afghanistan as soon as possible.

Effective communications and social mobilization are critical to promoting vaccine acceptance and countering misinformation that negatively affects the programme. The situation is clearly not static and, as was noted by the May 2018 TAG, it is vital that the programme continues to track the impact of communications interventions on campaign quality, attitudes at household and community levels, and rates of missed children and refusals. Keeping the impact of communications activities under review is essential to ensuring effective targeting and tactics, as well as appropriate and impactful use of the annual USD 22 million allocated to support this aspect of the programme.

Social media, such as Facebook and WhatsApp, has become an important channel for the circulation of video and messages attacking the polio vaccine. It is not clear that the programme has a sufficiently evolved strategy to counter this phenomenon.

In the East, there are hostile radio broadcasts by four radio stations in Kunar and Nangarhar, reportedly controlled by DAESH. These stations continuously broadcast a barrage of anti-polio propaganda, as well as direct threats to polio staff. Examples of broadcast messages include that, “Killing a polio worker is worth the same as killing eight to 10 Americans” and the injunction that any individual known to be associated with the polio programme must be killed immediately. These broadcasts occur over many hours in the day and the short radio “spots” paid for by the polio programme represent an inadequate countermeasure. There is an urgent need to develop an effective strategy to counteract this deluge of anti-polio propaganda. The government along with its military partners should take measures to either close down these radio stations or at least scramble their signals.

There is also evidence of increasing refusals as a result of this propaganda and it seems to be increasingly difficult to identify religious and community leaders who are willing to speak out and advocate on behalf of the polio programme. A Mullah who was speaking in favour of the programme was recently killed in his own mosque, in the middle of Friday prayers.

Brand new banners affixed to a military outpost on the road between Kandahar and Spin Boldak.

In discussions with parents, community representatives, frontline workers and others about the most effective sources of information on polio, the roles of social mobilizers and local influencers were repeatedly emphasized. The media most commonly mentioned were: radio, television and the internet. Banners and other printed materials seem to be regarded as less effective given high levels of illiteracy. Furthermore, the team felt that the design elements used for the banners have been in use for so long, that people simply may not notice them anymore. Clearly, these are very unscientific findings, but the need for a more informed assessment as to the impact of these different communication channels is precisely why a review is necessary. We need to better understand how the maintenance or introduction of new communications measures may help to reach missed children or counter refusals; it is not clear that the programme in Afghanistan currently has such evidence.

Other important questions for the review include: how to counter aggressive radio broadcasts (in Pakistan, some stations have been blocked by the authorities); whether it might be possible to engage with Facebook and other internet platforms to block the dissemination of false information about polio; what can the programme do to enhance its capacity for crisis communications and the rapidity and effectiveness of its response to communications challenges; and how the programme might more effectively localize its messaging in the VHRDs.

7. Non-governmental organizations

In recent reports, the IMB has recommended a stronger role for the NGOs that are contracted to deliver basic public health services including routine immunization, under Afghanistan's BPHS initiative. During the review, the team heard a variety of opinions as to the capacity of BPHS implementing partners to more actively support polio eradication activities. The quality of

performance of BPHS NGOs is highly variable, and even the best of them appear to be struggling to provide basic services, including routine immunization. One major issue concerns the population denominators being used in the bidding process for contracts and the fact that these population figures are inaccurate. In Kandahar, for example, the NGO contracted for the provision of BPHS is being paid for the delivery of services to a population of 1.2 million (based on figures from the Central Statistics Office), whereas the actual population of the province is estimated to be closer to three million.

The issue of population came up a number of times during the team's visit, not only in regard to BPHS coverage, but also, for example, in regard to the estimates used by the polio programme itself. Overestimation of the target population for polio may open up the possibility of corruption. Whilst the team believes that the polio programme population figures probably represent the best available estimates, it also believes the government should prioritize undertaking the census that had been planned, prepared for and funded for 2013, but then postponed.

Questions were raised about the contracting process for BPHS NGOs, with a number of informants suggesting that some contracts are awarded on the basis of unrealistically low bids. One senior public health official also expressed concerns that contracting decisions were being made in Kabul without necessary consultation with sub-national authorities who may be in a better position to make judgements as to the capacity of NGOs in their provinces.

The review team does not believe it would be appropriate to formally allocate responsibility to BPHS NGOs for any major component of the polio eradication programme, particularly at such a critical juncture. In the 15 highest priority districts for polio (named 'Focus Districts'), the programme should develop tailored approaches specific to the local realities. This may well include implementation of certain activities through NGOs, if there are NGOs present in those districts that have the capacity to do what is required and have access to the target population.

The potential role of BPHS and other NGOs in the implementation of the polio programme is currently being pushed by some local and international donor representatives; this amounts to an unwelcome distraction in the current circumstances.

8. Epidemiology

In 2018, 13 cases of WPV had been reported in Afghanistan (as of 12 September 2018) compared with 14 cases in 2017 and 13 in 2016 (see Figure 7). At the time of our visit, there were eight districts with confirmed WPV in 2018 compared with nine in 2017 (data as of 11 August 2018). Overall, six of the affected districts in 2018 did not report a case in 2017 leading to a total of 15 affected districts in the last 21-month time period (see figure 8).

Figure 7. WPV isolates by month in Afghanistan, January 2015 through August 2018

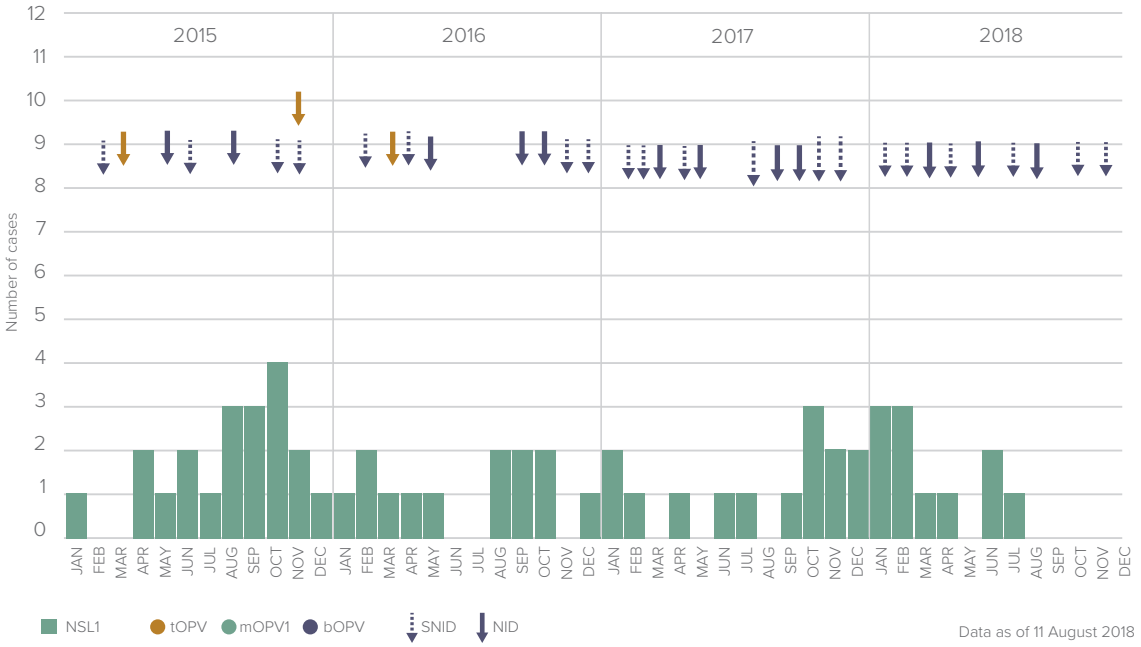
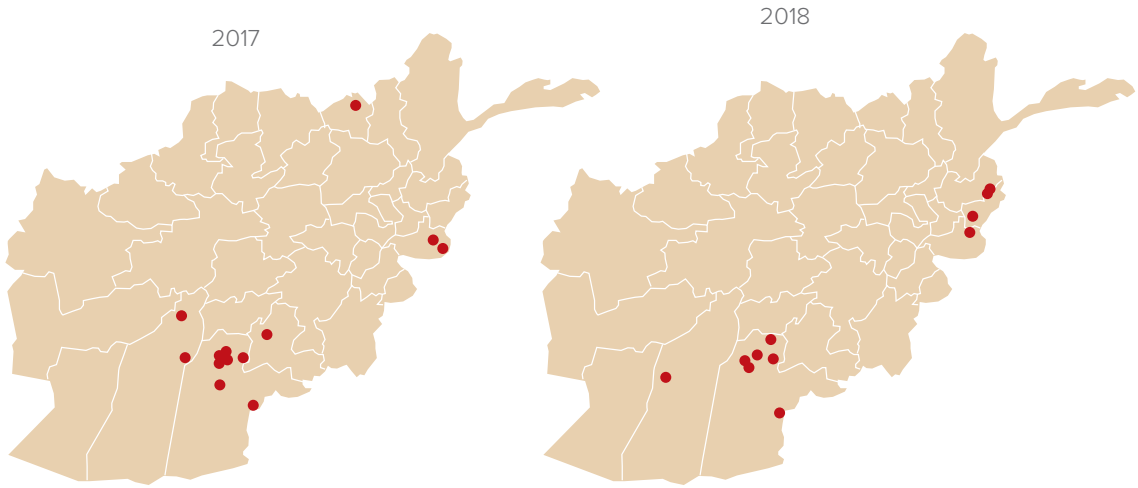


Figure 8. Geographic distribution of WPV cases in Afghanistan, January 2017 through August 2018



Province	No. Polio Cases 2017 NSLI	Date of Last Polio case 2017 NSLI	No. Polio Cases 2018 NSLI	Date of Last Polio case 2018 NSLI
Helmand	2	16-Apr-17	1	01-Jun-18
Kandahar	7	28-Dec-17	6	17-Jul-18
Zabul	1	10-Jul-17	0	-
Kunar	0	-	3	22-Jun-18
Paktika	0	-	0	-
Kunduz	1	21-Feb-17	0	-
Nangarhar	3	05-Nov-17	1	01-Jan-18
Total	**14**		**11**	

Data as of 11 August 2018

To supplement AFP surveillance, environmental surveillance was initiated in 20 sites in 2013. In 2018, 15 sites reported positive samples for WPV including 12 sites that had more than one positive sample. Genetic sequencing demonstrates detection of four distinct genetic clusters in 2018 compared with three in 2017. Cases continue to be geographically clustered in the East and South.

Overall, Afghanistan has a well-established AFP surveillance system, including 1492 active surveillance and 2504 zero reporting sites. In addition to 795 AFP focal points, incentives are provided to the 34,584 community-based informants for reporting AFP cases. Specimens are transported by road to the regional reference laboratory in Islamabad for testing. For the past three years, all provinces have reported more than six AFP cases per 100,000 population. Indicators for stool adequacy and environmental isolation of non-polio enteroviruses by province are also good.

Afghanistan conducted four NIDs and six Supplementary National Immunization Days (SNIDs) in 2017 compared with three NIDs and six planned SNIDs in 2018. As mentioned earlier, more than one million children were missed in the May and August rounds. Evidence of increased population-based immunity is not robust. Among the 14 polio cases identified in 2017, three were zero-dose for both SIA and routine immunization polio doses and three additional cases had not received more than three doses. By the time of our visit, 45% of polio cases were zero-dose for both routine and supplemental polio vaccination. The vaccination status of children with non-polio AFP indicates concentration of under-vaccinated children in areas of ongoing transmission.

G. PAKISTAN

1. Operating environment

In its October 2014 Report, the IMB stated that *"Pakistan's polio programme is a disaster. It continues to flounder hopelessly, as its virus flourishes. Home to 80% of the world's polio cases in 2014, Pakistan is now the major stumbling block to global polio eradication".* The situation has improved dramatically since then.

In 2018, Pakistan has reported four cases of WPV (as of 12 September 2018), three of which were in Dukki, a remote district of Balochistan with dates of onset between March and May 2018. The most recent case was in Sarki Tetara Union Council, Charsada district of Khyber Pakhtunkhwa, with onset of paralysis on 8 July 2018. This represents just 25% of the global cases reported so far. There is, however, no room for complacency and the occurrence of the cases this year is a reminder that whatever the overall quality of the national programme, there may still be pockets that continue to represent threats. How many more pockets of low quality could there be?

Speaking about Pakistan, one source, by word of caution, characterized the current situation as a "time-machine moment", with previous challenges re-emerging, including the re-emergence of positive environmental samples in areas that had been clear and declining acceptance rates, even in communities where the CBV's are operating. The programme must continue to place major emphasis on maintaining and increasing the quality of SIAs in all areas and particularly in the highest risk areas.

In the past, some of the principal threats to the programme involved violence, intimidation and denials of access. Significant threats remain, but intensive efforts by the police and military, as well as continuing efforts to promote vaccine acceptance have helped moderate their impact. Impressive tracking of verified security incidents by the national EOC gives clear confirmation of a reduction. This tracking system is an important tool for managers. For workers on the ground, the fact that a system exists for monitoring and addressing threats to their security should be an important source of reassurance. Nevertheless, security remains, and should remain, an area of major concern, including in the light of threats that are relatively new, such as fears of the potentially growing influence of DAESH in the border areas with Afghanistan.

One of the major challenges is the sheer scale of operation; Pakistan has a population of just over 200 million people, making it the fifth most populous country in the world. Sixty-four percent of the country's population is under the age of 29[5]. The polio programme's target population of under-five children currently stands at 38.4 million. In rural locations, this target population is often spread over large areas and the size of many of the districts into which the programme is administratively divided

[5] United Nations Development Programme (2017) Pakistan National Human Development Report Summary: Unleashing the Potential of a Young Pakistan. [Accessed 2/9/2018][Available at: http://www.pk.undp.org/content/dam/pakistan/docs/HDR/NHDR_Summary%20 2017%20Final.pdf]

is enormous. Balochistan makes up 45% of Pakistan's landmass, is larger than the state of New Mexico in the United Sates, and is almost the size of Germany.

According to a 2016 report, four out of 10 Pakistanis live in multidimensional poverty[6]. These rates are significantly higher in some of the highest risk areas for polio, standing for example at 73% in Khyber Pakhtunkhwa's tribal areas and 71% in Balochistan and, within Balochistan, rising to over 90% in areas such as Killa Abdullah, Harnai and Barkhan.

Pakistan ranks 147 out of 188 countries for the Human Development Index. According to the World Bank Group, Pakistan remains one of the lowest performers in the South-Asia Region on human development indicators, especially in education and stunting, two issues that were prominently highlighted by the newly elected Prime Minister in July 2018[7]. As many as 44% of children under-five are stunted. Gender disparities persist in education, health and all economic sectors. Pakistan has one of the lowest female labor force participation rates in the region. Spending on health, nutrition, and education, totaling 3% of GDP, is significantly lower than most other countries. Approximately 40% of Union Councils in Balochistan are without any health facility.

According to a 2016 fact sheet[8] issued by WaterAid, Pakistan is among the top ten countries with the greatest number of people living without access to safe water; 25 million people continue to defecate in the open; 46% of the population does not have a handwashing facility at home with soap and water; and only 23% of households have a garbage collection system. Once again, there are enormous disparities in levels of access to water, sanitation and hygiene with slums and other informal settlements being the worst affected. Poor water and sanitation, inadequate nutrition and a lack of access to even the most basic health care services for the most disadvantaged populations, create the perfect conditions for the poliovirus to survive.

[6] Pakistan's MPI multidimensional poverty index builds upon the global MPI index used by United Nations Development Programme in the Human Development Report since 2010 and retaining the same three core dimensions of education, health and living standards. The choice of indicators in the Pakistan study, however, reflects the country's particular context and political priorities, including: years of schooling, child school attendance, school quality, water, sanitation, overcrowding, access to electricity, cooking fuel, assets (including land and livestock in rural areas), access to health facilities, immunization, ante-natal care and assisted delivery.

[7] World Bank [Online] The World Bank in Pakistan. [Accessed 2/9/2018] [Available at: http://www.worldbank.org/en/country/pakistan/overview]

[8] WaterAid (2016) WASH Situation in Pakistan. [Accessed 2/9/2018][Available at: http://washwatch.org/uploads/filer_public/c3/61/c361cf33-2fbc-4b68-9fad-ac2337b17145/wash_situation_in_pakistan_wateraid_pakistan_2016.pdf]

Jattak Stop River - an open Sewer in 'Thirteen Series' Union Council, Quetta, Pakistan.

Pakistan underwent a general election in July 2018 and Imran Khan has emerged as the new Prime Minister. Imran Khan has a strong history of support to polio eradication efforts in the country, including the 'Sehat Ka Ittehad' campaign in Khyber Pakhtunkhwa. This background provides cause for optimism that polio will remain at the top of the new government's priorities. It came as a shock, however, when the Prime Minister's Focal Point for Polio resigned shortly after the election. It is hoped that a worthy successor will soon be found and that the head of the national EOC will remain in place; at this critical juncture, continuity is vital.

2. Access and security

Perhaps more than any other country in the world, the polio programme in Pakistan has long been associated with threats and acts of violence against its workers. The number of deaths peaked in 2013, when 12 polio workers lost their lives. In the period 2013 - July 2018, a total of 34 killings took place. Assassinations of associated members of the security forces were many more. In the course of their visits to Karachi, Khyber Pakhtunkhwa and Balochistan, the review team members made a point of acknowledging the bravery and commitment of frontline workers. These frontline workers and workers across the country, particularly the women among them, continue to suffer frequent abuse, threats and mistreatment from the communities they are so dedicated to serving.

During the visit to Balochistan, the first Union Council visited by team members was Hazarganji, Quetta, in which Sakina Bibi and her daughter Rizwana were shot in January 2018. Immediately following this incident, campaign activities were paused, but the following day, nearly all campaign staff returned to their duties. After the campaign, however, 90% of the programme's CHWs in the area resigned, partly of their own volition and partly under pressure from families that feared for their safety.

There are no remaining inaccessible areas in Pakistan other than a few pockets in South Waziristan where special campaigns are implemented with the support of the military. However, there are a number of areas that remain insecure due to a variety of threats including: a) explicit threats to the programme and its workers, b) the activities of various militant groups opposed to the government c)

high levels of criminality, and d) the constant threat posed by continuing high levels of instability and conflict in Afghanistan.

The military has been instrumental in improving access and reducing the likelihood of incidents. Close coordination is maintained with the military and police at all levels and security micro-plans are developed for each campaign and merged with operational micro-plans. In Karachi, for example, campaigns require the deployment of an estimated 6000 police and the development of three layers of merged security plans. This system appears to work well in most places, though some concerns were expressed that police do not always arrive on time, nor in the numbers that have been agreed during the planning process.

At the community level, large numbers of police and levies (community police) are deployed routinely to provide protective cordons and close protection to polio teams. A remarkable feature of the Pakistan programme is that the majority of frontline workers are female, a fact that has a positive impact on the quality of the programme but which, in such a conservative society, increases the level of risk. However, there are exceptions such as Khyber Pakhtunkhwa's tribal areas where the number of women frontline workers needs to be increased. In areas where such recruitment is difficult, it may be easier to engage older women who tend to be able to move more freely in their communities, as was witnessed by team members who visited Gulistan-II.

In Balochistan, the scene of the most recent killings of polio workers, the security situation is tense, particularly in the areas closest to the border, where criminal activities including smuggling are an important additional factor to the activities of AGEs. Teams working in this area continue to express fears for their safety.

At the Friendship Gate on the border between Balochistan and Kandahar, where on average 1000 under 10's are vaccinated every day on the Pakistan side alone, there is a strong military presence. The military pride themselves on their direct support for the protection of vaccinators and in dealing with refusals. Regarding the former, vaccinators expressed the view that support by individual military personnel is variable and there are concerns that vaccination may at times be based on coercion.

The use of coercion in countering refusals is not restricted to the occasional actions of military personnel at the border in Killa Abdullah. It appears that, when faced with cases of stubborn refusal, district and union council representatives may routinely seek the support of the civil administration. A number of senior officials in Balochistan stated their willingness to confiscate national identity cards, incarcerate and intimidate. On one occasion, it was stated that local political candidates who spoke out against polio might be subject to disqualification from election processes.

International staff seeking to travel to Pakistan, are still facing issues in obtaining visas. In addition, travelling to insecure areas within the country requires a No Objection Certificate (NOC). Despite assurances provided by government authorities in Islamabad, it is evident that delays in issuing NOCs and occasional rejections are a significant impediment to programme monitoring in areas where there are concerns about quality and where it is critical to rapidly respond with technical support. The process for issuing NOCs has become more complex and is now centralized in Islamabad. It is strongly recommended that blanket NOCs be issued for all international polio staff and that these only be moderated when there are very specific reasons, such as significant changes in the security situation in particular areas. It is also recommended that the government consider prioritizing visas for polio staff.

3. Government ownership and leadership

There is strong government ownership and leadership of the polio programme in Pakistan. This leadership flows from the top-most levels, in the person of the Prime Minister, through the (now vacant) Prime Minister's Focal Person for Polio Eradication and the head of the national EOC. At the national level, it is clear that this government leadership is welcomed and fully respected by UNICEF, WHO and other implementing partners.

The national EOC is extremely well led and has evolved into an institution that is able to deploy impressive capacity in support of all major areas of the programme. In general, EOCs visited by the team at the sub-national level appeared to be well established and fully functional, though there were some concerns over the management dynamics and consistency of ground level engagement in Karachi. It was also felt that while goodwill exists in Karachi, more actionable requests are needed to strengthen relationships with local partners, philanthropists, and senior government officials.

Interlocutors in Khyber Pakhtunkhwa's tribal areas expressed some trepidation regarding the potential impact of the merger, planned over the next two years, between their well-functioning programme structure and EOC, and those of Khyber Pakhtunkhwa. It was pointed out, for example, that these tribal areas has special requirements, especially with regard to security and the routine involvement of armed forces. Khyber Pakhtunkhwa's tribal areas has traditionally received additional funding to help address its specific operational challenges and concern exists lest these provisions be lost in the course of the merger.

There is justifiable pride, across the programme as a whole, in the achievements made by Pakistan's polio programme in recent years and there are consequently high levels of morale. For the most part, there is also a consistent and reassuringly unsolicited emphasis on the need to avoid complacency, though in Karachi the team felt there was some evidence of a 'business as usual' approach.

One of the most important characteristics of the recent improvements is the willingness of leadership to seek out and admit to areas of weakness, embracing them as learning opportunities and chances to drive continuous improvement of quality at all levels.

At the time of the review team's visit, there were some concerns over potential disruption resulting from the 2018 elections. It was noted, however, that polio was highlighted as a high priority item for discussion in the handover between the outgoing and interim prime ministers. Following the elections, there is a strong sense that polio is sufficiently established as a top priority for the country that it will retain this status under the new government.

Government commitment extends well beyond the Ministry of Health and the structures that have been set up specifically for polio (i.e. the national EOC and the EOCs at the sub-national level). It includes significant support from the Pakistan military, the Ministry of Interior and the civil administration at provincial, district and union council levels. Effective involvement in polio and routine immunization activities is included in the annual performance appraisals of civil administrators. This latter engagement is particularly striking; the review team's mission to Pakistan coincided with a polio campaign and in their meetings with commissioners, deputy and assistant commissioners alike, it was apparent that all were fully engaged. One deputy commissioner in Balochistan noted that when there is a campaign, he and his team focus on nothing else. One reservation in this regard, is that polio teams may be prematurely escalating issues such as persistent refusals to the civil administration and that the latter may be resorting to measures that are inappropriately coercive. For example, cases were cited in which individuals identified as local orchestrators of refusals were locked up overnight, threatened with having their electricity and gas cut off, or had their children forcibly vaccinated in their absence from their homes. Such coercive measures may be counter-productive in the longer term.

4. Programme functioning

The programme has developed a complex operational structure and this complexity places a heavy onus on managers at all levels to ensure constant monitoring of performance and to take urgent remedial action when and where issues arise. For example, at the sub-national level and below, some continuing challenges are reported in coordination between the government and operational agencies and whilst these challenges are said to have been recognized at the level of the national EOC it is not clear that remedial actions are always as rapid and decisive as they need to be.

There are a few critical high-risk locations where the unified command that is so evident at national level is not always as effective. Both the government and partners need to constantly review performance and ensure they deploy the best people to the highest risk areas, organize them in management structures that are fit-for-purpose and ensure rigorous oversight of accountability and performance, as well as constant presence in the field.

Gadap in the district of Karachi which, by any measure, is one of the highest priority towns in the

country is one such area of concern. Within Gadap, Union Council 4 has long been identified as one of the highest risk communities. Union Council 4 has a target population of 97,054 children under-five. According to administrative coverage data, 6000-9000 of these children have been missed in each 2018 round, to date (for Karachi as a whole, administrative coverage shows approximately 100,000 to 172,000 missed each round this year). In Sindh as a whole, 10-15% of children were still missed after catch-up activities in the three rounds between January and April.

In their visit to Union Council 4, review team members felt there was little evidence of the required presence and close attention of senior government and programme officials. Suggestions to consider include holding a meeting of the sub-national EOC once a week in Union Council 4 (or other high-risk areas) so that senior sub-national officials may engage with frontline workers in open discourse and better understand ground level constraints, issues and opportunities. Prior to these meetings, there could be regular 'walk throughs' of Union Council 4 (and/or other high-risk areas) to help partners develop a joint understanding of challenges and lay the groundwork for agreements on appropriate solutions, including convergence of support and resources. It is also suggested that at least once a month these meetings should be attended by the Deputy Commissioner. During campaigns, senior-level EOC staff should be assigned to high-risk areas for the entirety of the campaign and should be empowered with the necessary authority and flexibility to address local problems as they arise. 'Rolling' campaigns could also be considered, to fully focus the power of the sub-national EOC in the weakest areas of Karachi. Furthermore, evening meetings held with Deputy Commissioners during campaigns should focus on programmatic issues rather than the rote recitation of administrative coverage.

In order for any of this to be possible, an atmosphere needs to be established in which team members feel encouraged to frankly discuss and share weaknesses without any fear of retribution or dismissiveness at the sub-national EOC level and below. Representatives of the Deputy Commissioners' offices should attend meetings at the union council level in high-risk areas to maximize interaction with, and learning from, field level implementers.

Finally, at the sub-national level, teams should be encouraged to innovate in order to adapt and more effectively respond to specific challenges in high-risk areas. For example, Hyderabad is implementing its own LQAS, whereas Karachi is refusing to contemplate 'quick and dirty' surveys in Gadap, citing excuses including lack of authority, finances and staff.

a. Community-Based Vaccination

CBV is a core strategy to stem virus circulation in the areas of highest concern for polio transmission in Pakistan. This programme was initially piloted by WHO, which developed a cadre of workers called Female Community Volunteers in a handful of union councils in Karachi. These women were hired from

their communities on a full-time basis. Management of the expanded programme has since been taken over by UNICEF working through a third party and the remaining Female Community Volunteers are gradually being absorbed into this new system. The primary objective of the CBV programme is to localize all activities, by recruiting workers who live nearby to register, vaccinate and continuously track all children under-five years old, develop micro-plans, and mobilize communities.

The CBV programme has successfully gained access to areas and children that were previously inaccessible. In most areas in which it has been implemented, the programme has rapidly increased the quality of polio vaccination activities and led to sustained high levels of type 1 immunity.

Micro-census data collected by the CBVs have given the programme a more accurate understanding of the number of children in high-risk areas. Round by round, this local, mainly female, stable, more accountable workforce has established greater trust with parents.

Since its initial roll-out in Karachi in October 2014, the CBV programme has gradually expanded in targeted areas of the core reservoirs. Following a comprehensive assessment in May 2016, the approach has been adopted throughout Tier 1 districts (Peshawar, Khyber, Karachi, Quetta, Killa Abdullah and Pishin), as well as select Tier 2 districts in South Khyber Pakhtunkhwa and its tribal areas (Bannu, Tank, North and South Waziristan).

Around 85% of frontline workers in the CBV programme are women. The CBV programme covers nearly 10% of the total target population in Pakistan. The current number of workers under the programme is over 22,000, including both frontline workers and their supervisors.

Registration of under-five children by CBV workers is incorporated into micro-plans, thereby providing a new level of accuracy in planning and execution of campaigns and follow-up of refusals and persistently missed children. As a result of improved accuracy in planning there is better recording of missed children. For example, over 74% of children reported as having been missed during the July 2018 campaign period were vaccinated during the course of extended catch-up. Post-campaign monitoring averages over 93% in CBV districts in 2018.

The review team was highly impressed by the quality and effectiveness of the CBV programme and by the way in which it is managed. The team also felt that the programme has significant additional benefits in terms of women's empowerment and challenging stereotypes in conservative communities. This has a transformational potential that goes well beyond polio and should be a major part of any transition discussions in Pakistan, as it has been in Nigeria. The team's impressions in this regard were most significantly influenced by their direct interactions with individual frontline workers, whose dedication and pride in their work was truly inspirational.

b. Supplementary Immunization Activities

Available data indicate a generally high quality of campaign activity across the country with relatively few areas where such quality may remain variable and need additional support. Dukki district in Balochistan where three of Pakistan's 2018 cases have occurred, represents a particularly salutary example. Dukki had previously been categorized as a relatively low priority district in Tier 3. However, it had been flagged as a weak area before the first cases occurred, with operational gaps, persistent refusals and a weak health system. In spite of the warning signals, no decisive action was taken, and one senior official offered the opinion that, "In Dukki we hit rock bottom, and then we kept digging". One potential take-away is that the programme might be focusing too much on what are classified as the highest risk districts and that this might be at the cost of adequate attention to Tier 3 and Tier 4 districts. As an illustration, in Balochistan it was noted that while all the attention had been focused on Killa Abdullah (one official stated, "We were throwing everything, including the kitchen sink at Quetta block"), it was in Dukki that the cases appeared.

The programme's response to the cases in Dukki appears to be robust, although time constraints did not allow review team members to visit. The District Commissioner (whose own brother had contracted polio in 1984) was kind enough to take the time to come and meet review team members in Quetta and was eloquent in describing the challenges faced by his District.

Dukki

Dukki, which means 'sorrow', is a remote and highly disadvantaged district in Balochistan. Previously, Dukki was a tehsil of Loralai, until it was split off as a separate entity in 2017. It has been plagued by inter-tribal conflicts in recent years and relies heavily on coal-mining, which in turns relies on workers who travel from other parts of the country and Afghanistan. Government infrastructure and access to basic services are extremely limited. Such public officials as are present in Dukki, come from Loralai and it is difficult to attract the human resources the district needs due to the nature of conditions there. There are two women doctors among a total of four medical officers in the whole district, with only two of these medical officers in the district hospital. Only two out of the district's Basic Health Units are functional and the district has only one ambulance. There are only three hours of electricity a day in the district headquarters, a limited road network (four union councils have no roads or electricity at all) and a highly dispersed population outside of Dukki town, which poses considerable logistical challenges, including in

the implementation of polio campaigns. Routine immunization coverage is extremely low, with inactivated poliovirus vaccine reported as being just 2% and other antigens no more than 3-5%. As a Tier 3 district, Dukki does not benefit from the CBV programme and has previously implemented campaigns through the Department of Health using volunteer teams amongst which levels of turnover are high. It is understood that efforts are currently underway to address this, including by increasing the number of female workers in the programme. The most recent TAG report concluded that "the main reason for the outbreak of three WPV cases in Dukki district, lies in historically poor quality of operations, including routine immunization. To prevent any additional outbreaks, further improvement to basic programme quality in susceptible districts is necessary to reach remaining un- and under-immunized children".

The Pakistan programme has recognized that its previous strategy of monthly campaigns left little time for work on quality improvement particularly to address missed children, where greater community engagement by frontline workers is essential. The need for greater spacing between campaigns was consistently emphasized by frontline workers, their supervisors, union council and district level staff with whom the review team members interacted. The four-week cycle also placed a heavy burden on more senior members of the programme and reduced the opportunities for technical staff to reflect on, design and roll-out new initiatives aimed at quality improvement.

The intensity of the previous campaign schedule was also described as a major contributing factor to growing frustration, even anger, on the part of communities at all locations visited and these emotions were cited as perhaps the true underlying cause of refusals and 'not available' children. The review team welcomed the May 2018 TAG's support for provisions in the 2018/2019 National Emergency Action Plan to move to a six-week cycle for campaigns.

c. Missed children and refusals

Refusals across the programme are at best stable, and at worst increasing. The latter increases are a particular concern when they occur in the high-risk districts, where there has been a steady upward trend between May 2017-May 2018. One spike in March 2018 was attributed to an AEFI that occurred during a measles campaign. The programme has begun to prepare crisis communication strategies in advance of the next measles campaign, which is planned for October 2018, including a rapid response mechanism.

Other major factors leading to missed children identified by the programme include direct refusals, misconceptions (including those driven by anti-polio material disseminated via social media), refusals in the name of religion and the excessive number of campaigns. The latter has been increasingly alienating communities, particularly in the context of the total inadequacy of basic services available in many areas (e.g. water, food, sanitation, basic health care, infrastructure). The programme should

be more proactive in asserting the positive dictates of Islam in regard to parents' responsibility to care for their children.

Extensive efforts are made to vaccinate missed children, including by using highly detailed household registers in CBV areas during the catch-up period. However, some concerns remain regarding the completeness of household registries and the recording of all missed children. Moreover, having catch-up done by the same set of vaccinators who missed children in the first place has hardly ever proven to be most effective strategy. Simple switching of teams for the catch-up may prove more effective, as was the experience in India.

Sub-national polio staff have tremendous confidence that children are reached in their houses and that this reduces the need to try to vaccinate children on the move (in the streets) during campaigns. The sub-national EOC in Karachi expressed a distinct policy not to vaccinate children on the streets in high-risk union councils for the fear of reprisal by the parents. However, when the same issue was raised with the Minister and Secretary of Health, as well as the vaccinators in Machar Colony, they did not share this concern. It is critical that senior government officials spend more time in the field during campaigns to better understand field level dynamics and challenges faced by the programme. The review team believes there should be more consistent emphasis on catching children on the move in markets, on the street, or when they are at play.

d. Monitoring and evaluation

Overall the level and sophistication of data collection, analysis and use by the polio programme in Pakistan was impressive. The monitoring of real-time data and the strong national EOC data team should serve as a model to other countries operating EOCs and highlights one of the many aspects of the polio programme that should be considered in the context of transition and integration with the Global Health Security Agenda.

There remains a need for additional granularity of data in some high-risk union council. LQAS-like assessments in select locations or quick and dirty surveys are needed at the union council level and below to identify gaps that we know to exist but do not see reflected in the district-level programmatic data.

The presence of continuous positive environmental samples also demonstrates a clear disconnect with the existing administrative and monitoring data in some locations, for example Rawalpindi. Additional investigation is needed to determine appropriate solutions.

5. Partner coordination and capacity

Coordination among implementing agencies and other partners has improved considerably as a result of the strengthening of government ownership and leadership, the establishment of the national EOC and the deployment of a number of highly effective staff.

Close supervision and strong management are needed to ensure that this coordination and collaboration remain consistent at all levels of the programme and that any lack of harmony is swiftly identified and addressed. Staffing levels and budgets within the operational agencies are high, but this appears to be well justified in terms of the size of the country and its target population, the complexity of the programme, the programme strategy, achievements made in the recent past, and the pivotal stage at which the country stands in the eradication effort. The review team believes it would be inappropriate for the GPEI to be putting undue pressure on Pakistan to reduce its budget and expenditures at this critical moment.

6. Human resources

In the course of discussions in Balochistan, the extent to which UNICEF and WHO rely on secondments of professional staff from government became apparent. Securing the services of such staff is not always easy because of the poor terms and conditions they are offered under the forms of contract that are used in this regard. There is also a significant dilemma for the programme given that by recruiting staff on secondment the programme is stripping capacity from regular government health services in highly deprived areas. This is a particular issue in some of the remotest and most inadequately resourced parts of the country where levels of pay are surprisingly lower than in other locations, due to the fact that terms and conditions are not consistent across the provinces.

7. Communications

The review team welcomed the recent independent external review of communications in Pakistan. The programme seems to have fully embraced the findings of the review and the communications presentation to the review team on its arrival in Islamabad was refreshing for its honesty and

willingness to embrace shortcomings as opportunities for further improvement.

One slight reservation was that the review team was comprised entirely of internationals. It is recommended that any such review, whether in Pakistan or elsewhere, should seek to harness, and further develop local capacity not only in the realm of communications, but also in disciplines such as anthropology that are critical to understanding the specific social dynamics of target communities. It was also a missed opportunity to engage counterparts from the Afghanistan programme. Efforts in this regard can be an important part of the polio programme's legacy and transition strategy.

One question that occurred to the review team during its visit was whether improvements in the quality of the 'operations' aspects of the programme, may have come at the cost of a reduced emphasis on communications. For example, concern was expressed that the workload of frontline workers under the CBV programme, particularly given the previous frequency of campaigns, may have robbed them of the time to engage in the sort of interpersonal communication activities that are needed to build trust in the programme, the vaccine, and the vaccinators themselves. In Balochistan for example, area supervisors expressed a need for training on interpersonal communication skills to enhance their work on following up refusals. Any such training needs to include and emphasize compassion and understanding towards people who have very understandable concerns about the polio vaccine and the frequency of 'knocks on the door'. The critical moment of knocking on the door requires a sophisticated set of skills to convince or negotiate with parents. It's not just about memorizing a standard set of talking points, it's about connecting.

Case investigation teams and teams following up on refusals should include members with the language, cultural understanding and technical capacity to analyze and understand social dynamics. Efforts to promote better vaccine acceptance need to include not just data collection, but improved qualitative understanding of who people are and other influencing factors. One informant cited Dukki as an example of a place where social analysis could have revealed warning signals based on a better understanding of the reasons for vaccine resistance including cultural values, health seeking behaviours and so on.

8. Epidemiology

Pakistan has made substantial progress towards polio eradication, but transmission persists. Polio cases have declined annually since 2014 with four cases identified in 2018 (as of 12 September 2018) (see Figure 9). Genetic sequencing demonstrates a decrease in both the number of clusters and their geographic spread (Figure 10). At the same time, the AFP surveillance system was reinvigorated with significant investments in human resources and training. The current indicators suggest a sensitive surveillance system with a non-polio AFP rate of 12.5 per 100,000, stool adequacy of 89%, enterovirus isolation of 16%, and notification within 7 days of 81% in 2018.

Figure 9: Trends in Polio cases in Pakistan, 2011-18

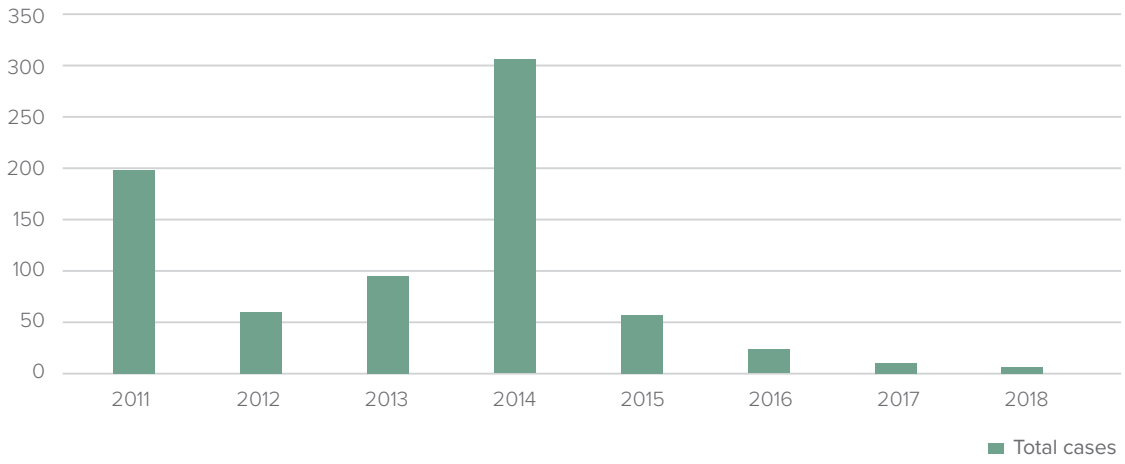
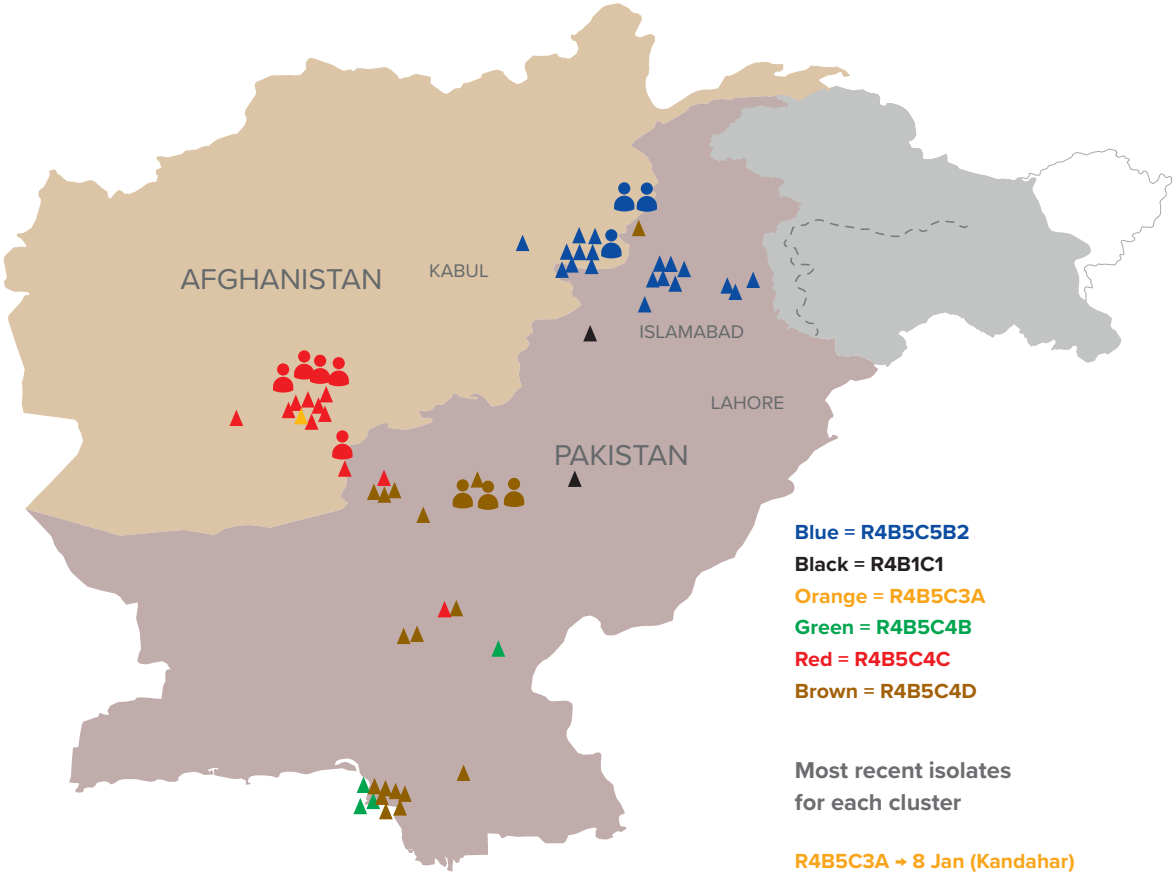


Figure 10: WPV1 cases and positive environmental samples, by cluster, 2018



Blue = R4B5C5B2
Black = R4B1C1
Orange = R4B5C3A
Green = R4B5C4B
Red = R4B5C4C
Brown = R4B5C4D

Most recent isolates for each cluster

R4B5C3A → 8 Jan (Kandahar)
R4B1C1 → 31 Mar (Bannu)
R4B5C4B → 20 April (Karachi)
R4B5C4C → 28 May (Kandahar)
R4B5C5B2 → 28 May (Nangarhar)
R4B5C4D → 28 May (Quetta)

Data as of 22 June 2018

Various measures of population immunity demonstrate similarly encouraging trends. Vaccination rates among non-polio AFP cases increased from 94% with three or more doses in 2014 to 98% in 2018. In addition, community-based serosurveys in 2017 found high (more than 90%) sero-type 1 immunity in key districts, as well as increases from similar surveys conducted in 2016.

However, four cases and persistent positive samples from multiple environmental surveillance sites demonstrate the continued circulation of WPV. The Pakistan polio programme maintains an extensive environmental surveillance system with regular sample collection and testing at 55 sites. As of 4 September 2018, 61 environmental samples tested positive for type 1 WPV in Sindh (22), Khyber Pakhtunkhwa (16), Punjab (10), Balochistan (7), Khyber Pakhtunkhwa's tribal areas (2), Islamabad (4). Environmental surveillance complements the AFP system and provides critical information to the polio programme, particularly in densely populated areas where persistent virus circulation is suspected or frequent reintroduction is possible. Programme managers promoting the 'mystery' of positive environmental samples despite high coverage as reported by third party monitors (as referenced at the most recent TAG, as well as during the visit by the review team) runs the risk of distracting the programme at a critical moment and reflects an unwillingness to question the validity of their data.

The review team recommends the Pakistan programme continue its significant investment in environmental surveillance and rapid response to positive samples. This should include a regular review of the number and location of environmental surveillance sites. It is also critical that the programme provide consistent messages at all levels on the value and meaning of positive environmental samples.

Gaps in programme quality and consistency are also evident at the union council level. Inconsistent SIA quality is evidenced by clusters of underperforming districts and refusals. Routine immunization coverage also remains disturbingly low. For example, population-based data from the Pakistan Social and Living Measurement survey from 2014 and 2015 found the percentage of fully immunized children ranged from 51% in Balochistan to 89% in Punjab. To interrupt transmission, the Pakistan programme must collect, triangulate and analyze data at the union council level to identify gaps in programme quality and take immediate corrective action.

G. NIGERIA

"The country was deeply embarrassed by the premature declaration of victory in 2015, we will not declare victory now until we are able to access all areas" - Senior Official, National Primary Health Care Agency, Nigeria.

1. Operating environment

With a population close to 200 million, Nigeria accounts for nearly 50% of West Africa's population, and has one of the largest youth populations in the world. The largest economy in Africa (in terms of GDP), with an abundance of natural resources, Nigeria is Africa's biggest oil exporter, and also has the largest natural gas reserves on the continent. Inequality in terms of income and opportunities has been growing rapidly and has adversely affected poverty reduction. In 2017, OXFAM and Development Finance International published a Commitment to Reducing Inequality Index[9] in which Nigeria was ranked last of all 152 countries covered, including because of its very low levels of social spending (on health, education and social protection). More than 10 million children in Nigeria do not go to school and 1 in 10 children do not reach their fifth birthday.

The 2016/2017 MICS revealed that 77% of children aged 12 – 23 months in Nigeria have not received all the routine vaccinations as recommended by the national routine immunization schedule while 40% of children in this age group did not receive any vaccinations at all. There were 4.3 million children unimmunized in the country in 2015 alone. In the Healthcare Access and Quality Index published online by The Lancet in May 2018[10] Nigeria stood at 142 out of 195 countries studied and Nigeria ranks at 152 out of the 188 countries covered by the United Nations Development Programme's Human Development Index.

Despite Nigeria's positive economic growth for many years, poverty has increased, and the proceeds of growth are reported to have gone almost entirely to the top 10% of the population. The North-South divide has widened in recent years due to the Boko Haram insurgency and a lack of economic development in the northern part of the country. The lack of job opportunities is at the core of the high poverty levels, of regional inequality, and of social and political unrest in the country.

Now in its ninth year, the crisis in North-East Nigeria remains one of the most severe in the world[11]. In the three worst affected states (Borno, Adamawa and Yobe), nearly two million people are internally

[9] Development Finance International And Oxfam Research Report (July 2017) The Commitment To Reducing Inequality Index. [Accessed 2/9/2018][Available at: https://oxfamilibrary.openrepository.com/bitstream/handle/10546/620316/rr-commitment-reduce-inequality-index-170717-en.pdf?sequence=31] https://oxfamilibrary.openrepository.com/bitstream/handle/10546/620316/rr-commitment-reduce-inequality-index-170717-en.pdf?sequence=31

[10] Measuring performance on the Healthcare Access and Quality Index for 195 countries and territories and selected subnational locations: a systematic analysis from the Global Burden of Disease Study 2016 (2018). The Lancet. [Accessed 2/9/2018] [Available at: https://www.thelancet.com/action/showPdf?pii=S0140-6736%2818%2930994-2]

displaced, over 80% of these being in Borno State, the epicenter of the crisis and over 60% living in host communities. Given the size of the affected population, review team members were struck by the complexity of the challenges associated with ensuring effective coordination of the humanitarian response, not only within but also between sectors.

Access by the polio programme to its target population is relatively easier in the many IDP camps than where people have settled in host communities. Throughout the affected region, agriculture and commercial activities have ground to a halt. There are 7.7 million people in need of life saving assistance and an undetermined number still trapped in areas controlled by Boko Haram under the harshest of conditions and daily subject to all manner of violence and abuse.

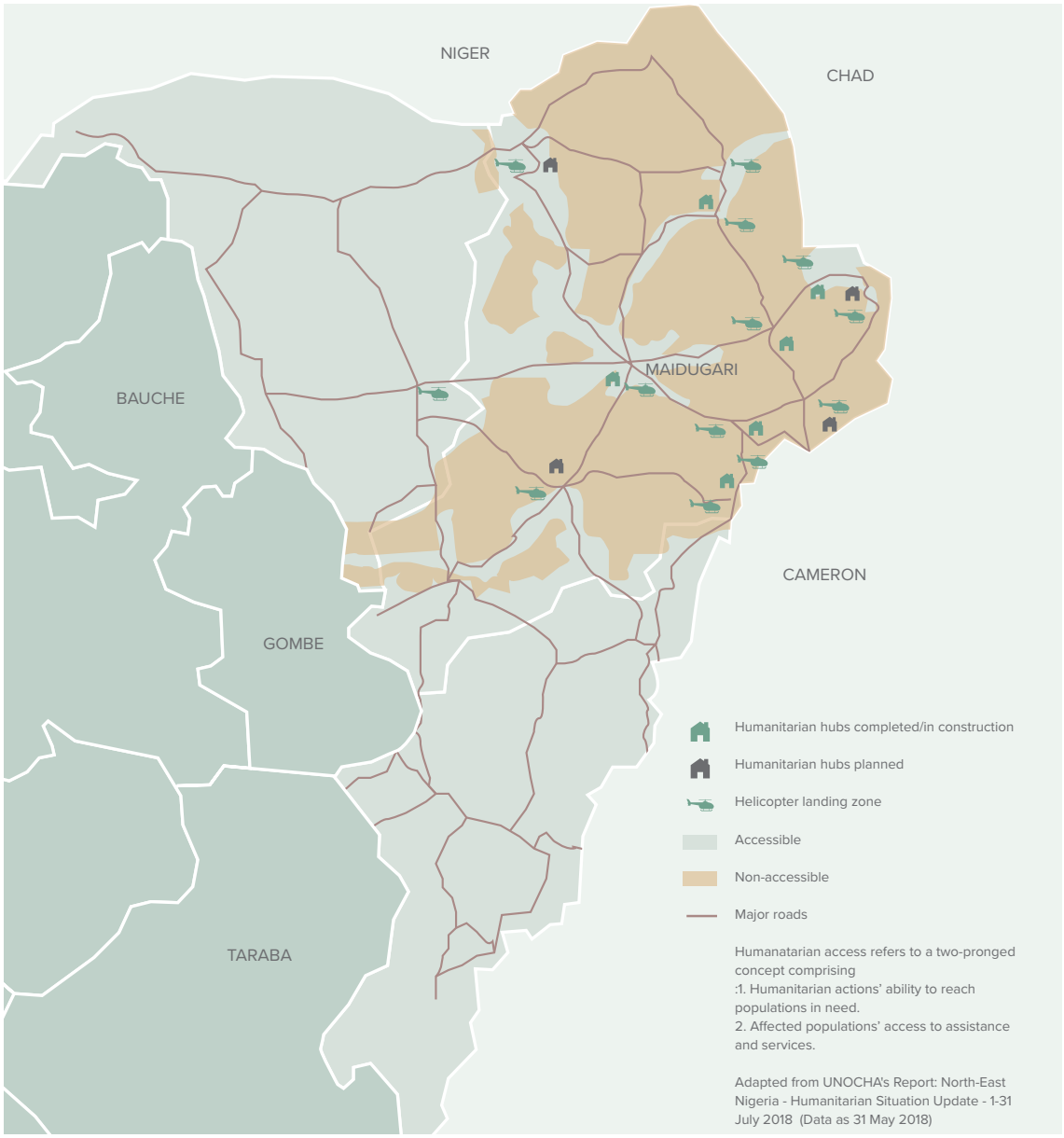
Review team members were struck by the difficulty of the working environment in the North-East, the ever-present insecurity and plight of communities, the sheer scale of the humanitarian emergency and consequent challenges to everyone involved in polio eradication and in efforts to bring broader services to the affected population. During a final debriefing in Borno, one very senior health official said that in forty years of his work as a doctor he had never been reduced to tears over the state of a patient, until confronted by the condition of new arrivals escaping Boko Haram controlled territory. Living conditions in the IDP camps seem to offer little hope for the future. For example, there are no secondary schools operating in Monguno LGA or its 16 officially recognized IDP camps. Bearing in mind the fact that past recruitment to Boko Haram forces was at least partly driven by feelings of injustice, poverty and lack of opportunity, one is forced to wonder what will become of the generation that currently represents the target of the polio programme.

[11] United Nations Office for the Coordination of Humanitarian Affairs (2018) North-East Nigeria Humanitarian Situation Update July 2018. [Accessed 2/9/2018] [Available at: https://reliefweb.int/sites/reliefweb.int/files/resources/02082018_ocha_nga_humanitarian_situation_update.pdf]

2. Access and security

Nigeria is beleaguered by security threats. In the North-East, Islamist extremists from Boko Haram and its splinter groups are waging increasingly complex attacks on military forces and civilians. In the middle part of the country, more than 1,300 people have been killed in vicious land disputes between cattle herders and farmers[12]. Farther to the south, violence spikes from time to time in the Biafra region, where separatists are pushing to secede. And in various areas, kidnappings of prominent figures and regular Nigerians alike have become common, including on major highways.

Figure 11: Access limitations in North-East Nigeria



[12] The New York Times, August 15th 2018 Akinwotu, E. Deadly Lack of Security Plagues Nigeria as Buhari Seeks Re-election. The New York Times [New York] 15 August 2018 [online]. [Accessed 3/09/2018][Available at: https://www.nytimes.com/2018/08/15/world/africa/nigeria-zamfara-violence-buhari.html] The New York Times, August 15th 2018

Large parts of the North-East remain inaccessible to humanitarian actors seeking to respond to the crisis (see Figure 11). Road movement is extremely limited and only the humanitarian hubs established in the LGAs of Maiduguri Gozwa, Bama, Ngala, Dikwa, Monguno, Banki and Damasak provide safe accommodation. Travel in the affected areas is challenging, with terrain that is not easily accessed and provides cover for insurgent groups. Humanitarian activities throughout the region are heavily dependent on helicopter services provided by the United Nations Humanitarian Air Service.

The polio programme has categorized its areas of activity by levels of accessibility (accessible, partially accessible and inaccessible) and developed programmatic tactics accordingly, including the Reaching Every Settlement (RES) and Reaching Inaccessible Children (RIC) strategies. The former is undertaken with the Civilian Joint Task Force while the latter is implemented by the Nigerian army whose forces are trained accordingly.

In accessible areas, conventional campaign approaches are used. Similar approaches are employed in the Internally Displaced Person (IDP) camps where the concentration of displaced populations makes it easier to reach them with vaccine. In partially inaccessible areas, the programme is building up a substantial network of community informants who undertake AFP surveillance, community mobilization, provision of basic medications and referral of people requiring professional care. In Monguno, the WHO cluster coordinator referred to the fact that they have been able to use informants to reach out to community leaders, establish their willingness to accept and support vaccination efforts and train vaccinators from the communities concerned. These campaigns are typically undertaken in a low-profile manner without using maps, finger-marking, door-marking and so forth, which might provoke suspicion and attract negative attention from Boko Haram. This was just one example of the flexibility and innovation that the review team felt were characteristic of the programme in Nigeria as a whole and particularly in security compromised areas.

One of the challenges for the polio programme as well as for the broader humanitarian effort, is to know exactly where populations are located so that they may be reached. Based on satellite imaging, it is estimated that 100,000 under-five children remain trapped in inaccessible areas under the control of Boko Haram. Even in partially accessible areas, it is often difficult to know the exact locations of those who have chosen to face the risks associated with remaining in their homes. Population estimates are developed on the basis of coordination with the wider humanitarian community, inducing the United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA) as well as with the Military. Thanks to support from the Centers for Disease Control (CDC) Atlanta and the Gates Foundation, the polio programme also uses satellite technology, to help pinpoint settlements that are then verified by the military as occupied or abandoned. A senior UNOCHA official commented that thanks to these assets, the polio programme probably has the most accurate data available on the remaining population and this information helps guide the broader humanitarian effort.

3. Government ownership and leadership

There is strong technical leadership and coordination of the polio programme through the national EOC in Abuja and at the sub-national EOCs. The EOC structure and the quality of the current management helps ensure a common vision and a shared strategic framework to encompass and guide the work of all GPEI partners. The relationship between UNICEF and WHO appeared to be strong at both the national and subnational levels, with the UNICEF and WHO Representatives reflecting on the fact that barriers between their respective teams and the functions they perform have been removed. This situation has reportedly been facilitated by the two regional offices, including through a joint meeting held in Brazzaville in 2017.

The effective functioning of the EOCs has enabled the programme to move from coordination to true integration with common data platforms and a joint accountability framework. Nigeria's is a data driven programme, with sophisticated collection, analysis and use. Common data are available to be used at all levels of the programme. The Executive Director of the National Primary Health Care Agency told the team that when he took up his position one year ago, he quickly realized that, "We have to be truthful to ourselves, for years we have been lying". The review team welcomed the clear evidence of the subsequent increased emphasis on ensuring validity of data including as part of the accountability framework, monthly data reconciliation meetings for routine immunization and six-monthly data reviews with support from CDC and WHO. Team members who visited Kano were told of a 'data amnesty day' that recognized embedded problems with data falsification and encouraged a commitment to honest reporting after the amnesty was put in place.

Respect for and application of the accountability framework appears to be well integrated into the day-to-day management of the programme, although it is in need of ongoing refinement and more consistent enforcement. The team would like to emphasize the importance of commitment at all levels, from the federal leadership to the LGA chairman and local communities.

Review team members were able to meet with the Northern Traditional Leaders Committee on Polio and Primary Health Care in Kaduna, as well as in individual meetings with the Shehu of Borno, and local religious leaders in both Borno and Kano. Engagement of these and other community leaders remains a very notable and evidently effective part of the programme.

The establishment of the Presidential Task Force on Polio Eradication in March 2012, was widely welcomed as a powerful symbol of the government's commitment to the eradication effort. The declaration of polio eradication as a national emergency following the discovery of the last four cases in 2016, and the expansion of the Task Force to include all 36 Governors represented an important reaffirmation of this commitment. The most recent IMB report stressed the need to ensure

the continued quarterly meetings of the task force under the chairmanship of the President himself. Concerns were expressed during the review team's mission that the Task Force has only met three times since its revitalization in 2016, each time under the chairmanship of the Vice-President. Given these concerns, the review team feels that the IMB's previous recommendation should be reinforced.

Annual national budget allocations in support of the programme have been another powerful demonstration of Nigeria's commitment to polio eradication. However, there is concern over the varying size and timeliness of the release of these allocations (for example, the 2017 allocation was not released until March 2018), and a worrying uncertainty over the delay in resolving the level of funding for 2018, including a fear that this allocation may see a very significant reduction compared to previous years.

4. Programme functioning

The programme in Nigeria is not only open to innovation, it actively pursues new approaches that may bring improvements to its quality and reach. The review team also applauds an increased focus on routine immunization and the efforts to use polio capacity to support strengthening of the system nationally. Examples of innovations include:

- opportunistic vaccination and special intervention teams (transit teams, IDP vaccination teams, community management of acute malnutrition teams, community IDP tracking teams, market teams, nomadic strategy and hospital teams);
- identifying zero-dose routine immunization children during campaigns and triggering rapid follow up;
- a defaulter strategy that includes community mobilization and rewards for mothers with fully immunized children (e.g. a bed net), as well as the use of newborn tracing cards;
- a weekly AFP surveillance day on which all UNICEF staff set out to look for AFP cases;
- expanded use of community informants to undertake additional functions such as providing simple medicines such as paracetamol and oral rehydration salts, and referring and assisting people who are sick enough to need go to a health centre; and
- providing a model and ongoing advice to the development and management of the National Emergency Routine Immunization Coordination Centre.

A pervasive sense of urgency is evident at all levels and EOC leadership referred unprompted to the importance of ensuring the best available staff are deployed to the highest priority areas. The quality and commitment of teams at the state level and below was particularly noteworthy, including in areas such as Borno that represent extraordinarily challenging living and working environments.

In the course of its visits, the team had the opportunity to interact with a number of VCMs and urges the programme to prioritize efforts to enhance the quality and scope of their activities. The team was also encouraged by the government's expressed intention of integrating the VCM into its CHIPS programme under the Primary Health Care Revitalization programme.

The review team shared the Nigerian programme's concern over attempts by the GPEI to prematurely reduce the budget for the national eradication effort. The last thing the country or the programme can afford is a repetition of what occurred in 2016. Should a premature reduction in funding weaken the ability of the programme to: sustain the gains made; continue its efforts to persistently improve quality; contribute its capacity and expertise to national efforts to strengthen routine immunization and respond to outbreaks as it did in the case of Ebola; reach the most vulnerable children who remain trapped by Boko Haram, it would be a disaster – *it's not over until it's over.*

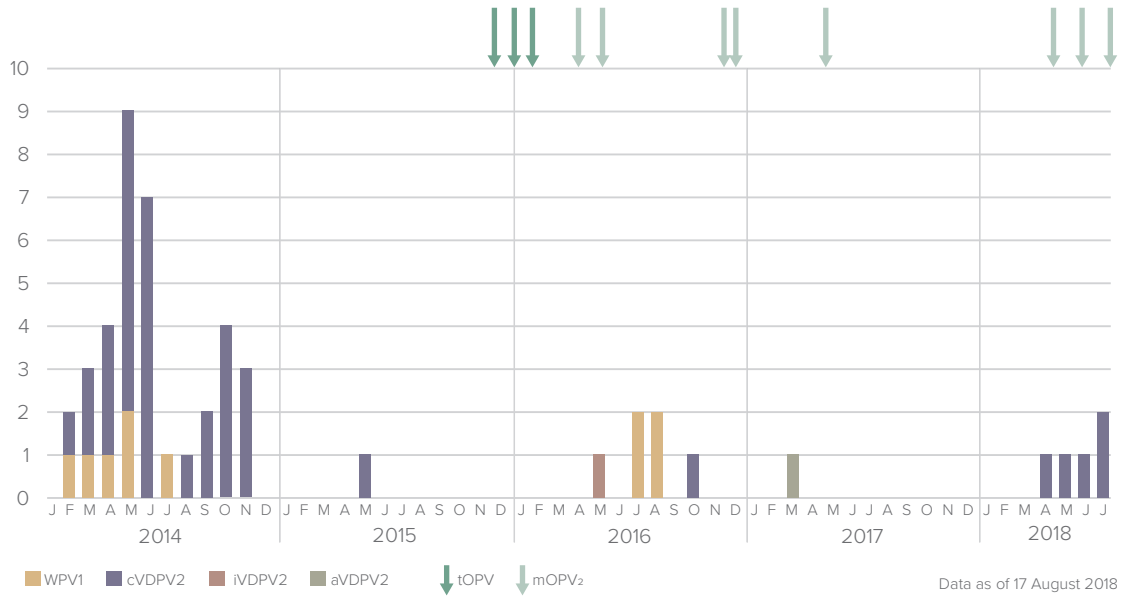
a) Supplementary Immunization Activities

There were no ongoing SIAs during the review team's visit to Nigeria, so it is difficult to offer informed comment on this aspect of the programme.

5. Epidemiology

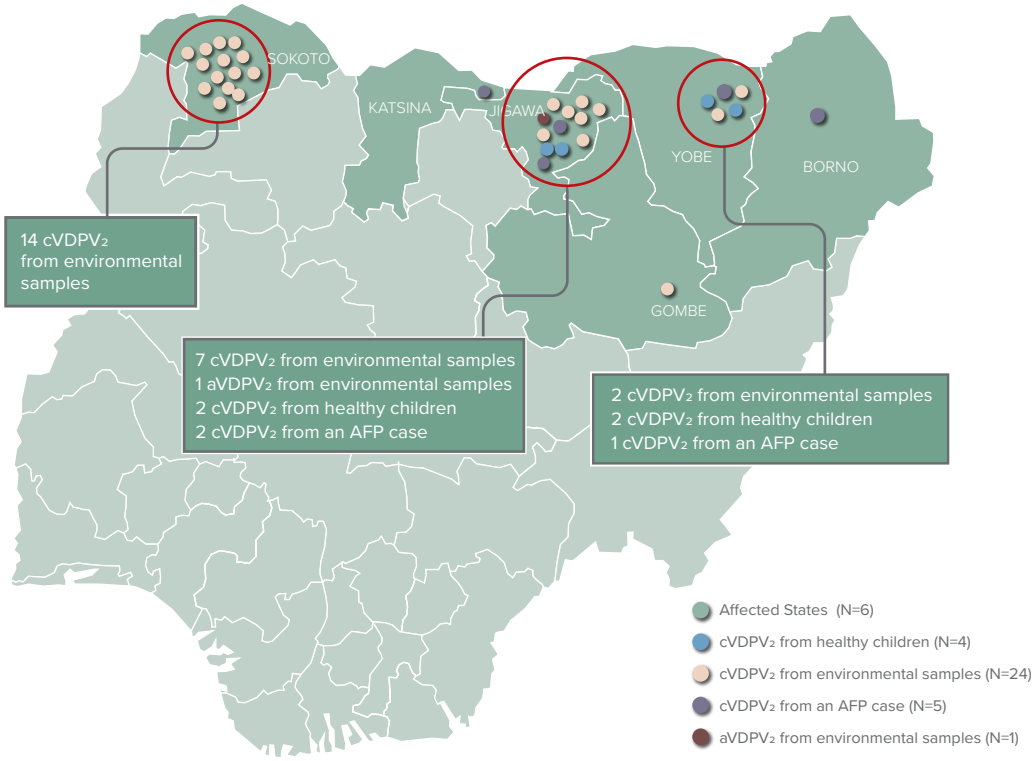
Nigeria has made substantial progress in polio eradication in the past five years. The last case of WPV Type 1 was from Kumalia Ward in Monguno LGA of Borno State, with onset of paralysis on 21 August 2016 and was part of a cluster of four cases from this area (see Figure 12).

Figure 12. Trends in WPV and cVDPVs in Nigeria, 1 January 2014 to 17 August 2018



Prior to this cluster, the country had gone for two years without a case. Currently, the country is conducting environmental surveillance in 79 sites in 21 states. Environmental surveillance has not detected WPV since the last outbreak, however, AFP and environmental surveillance has detected wide scale circulation of type 2 cVDPVs (Figure 13).

Figure 13. Distribution of cVDPVs in Nigeria, January 1 to August 17, 2018

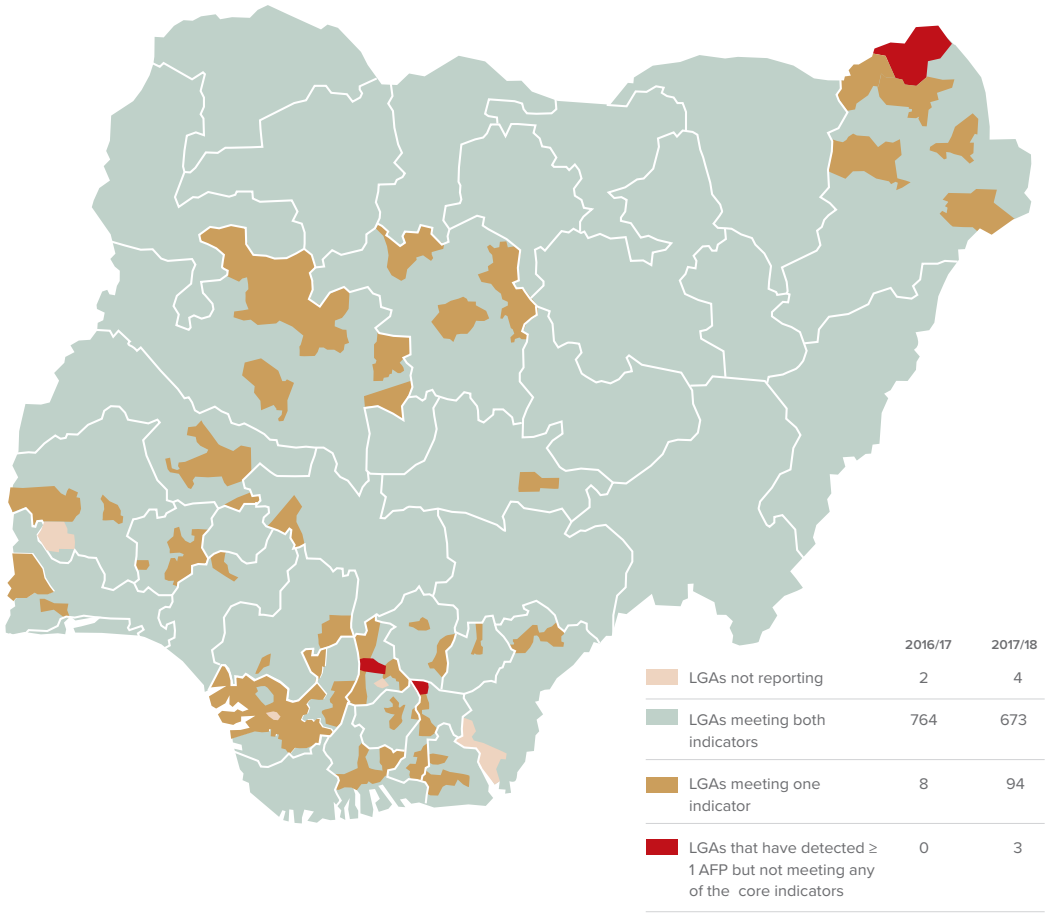


The programme has adopted an aggressive response to the cVDPV outbreaks including two outbreak response campaigns with mOPV in May 2018, followed by routine immunization intensification campaigns. Plans are on track to conduct a follow-up mOPV campaign in September 2018 in all the affected areas.

Nigeria has a well-established AFP surveillance system with a non-polio AFP reporting rate of 11.3 nationwide. All states and most LGAs are meeting indicators for sensitivity and stool adequacy (see Figure 14). Yet, there are challenges in conducting surveillance in the insecure areas of Borno and Yobe states. At the time of the review team's visit, 37 non-polio AFP cases had been reported from inaccessible areas in Borno. Forty-nine percent of the specimens were inadequate due to delays in reporting and/or collection of specimens.

While the nascent effort to conduct AFP surveillance in inaccessible areas is to be commended, it is not yet sufficient to determine whether or not poliovirus transmission remains. Further disaggregating the data from inaccessible areas may allow for the identification of additional strategies to improve specimen collection and AFP surveillance overall.

Figure 14. LGAs meeting AFP rate and stool adequacy surveillance indicators August 2017 to August 2018, Nigeria



The programme is investing considerable resources to strengthen surveillance in the insecure areas of Nigeria including support from community-based informant networks and support to case-finding and case investigation from the Nigerian military. Incentives are paid for informants who report a case. Other activities to address surveillance gaps include peer review of surveillance data, temperature tracking using temperature log tags to track transported stool samples and expansion of environmental sampling sites. Stools are tracked from the collection points to the laboratories to ensure the maintenance of a reverse cold chain all through the process of sample transportation.

Overall, the programme is focused on addressing the immunity gap in the North-East and maintaining high levels of population-based immunity in the rest of the country. Population immunity profile analysis by the Institute of Disease Modeling indicates a number of areas with low type 1 immunity, posing a risk of continued transmission of WPV, with highest risk in the North-East. The vaccination status of non-polio AFP cases is good with most states reporting more than 90% of cases receiving four or more doses of the oral vaccine.

Unsurprsingly, the highest concentration of zero-dose cases is in the North-East. To improve the immunity profile, the country is conducting two NIDs and four SNIDs in high-risk LGAs in 2018. Overall, LQAS results indicate sustained improvement in the quality of campaigns with the exception of the insecure areas of Borno state.

Beyond the traditional campaigns, the programme has introduced a series of innovative in-between round interventions targeting children who potentially could be missed through the house-to-house campaigns. These strategies included: hospital vaccinations, market vaccination, RIC and RES, vaccinations in the IDP camps etc. The RIC and RES strategies were specially employed in Borno and Yobe states to address areas with security treats and risks. The two strategies have resulted in more settlements being accessed and thus more children vaccinated in security compromised areas than the previous years. Additional approaches to boost population immunity included increasing vaccination in IDP camps, profiling and vaccination of children liberated from captivity in the security compromised areas and transit point vaccination.

I. ANNEXES

Annex 1: Team biographies

Peter Crowley (Review Team Lead)

Prior to his retirement at the end of November 2015, Peter had been head of the polio team at UNICEF headquarters in New York, responsible for overseeing, supporting and representing UNICEF's input to the global eradication effort. He assumed this position after three and a half years as UNICEF Representative in Afghanistan and three years as Director of the UNICEF programme in South Sudan. Peter previously worked in a variety of positions at UNICEF headquarters, including as Director of the Office of Public Partnerships; Principal Officer in the Office of Emergency Programmes; Deputy Director in the office of Evaluation, Policy and Planning and Senior Programme Officer for Child Rights. Prior to joining UNICEF, Peter had been responsible for leading efforts to bring greater coherence and collaboration to the work of what were then the twenty-five members of the International Save the Children Alliance and had also served as head of Save the Children UK's regional office for South Asia. In earlier years, Peter had worked for five years as United Nations Chief Technical Adviser on an innovative and globally renowned 'education for rural development' project in far-West Nepal and as head of VSO (Voluntary Service Overseas - the British Volunteer Programme) programmes in Nepal and South Sudan.

Athalia Christie

Ms. Christie joined CDC in 1997 as a Public Health Prevention Service Fellow focusing on lymphatic filariasis. She served her state assignment as the Coordinator of the Expanded Contact Investigation Unit at the New York City Tuberculosis Control Program where she oversaw more than 30 outbreak investigations. From there, she embarked on a series of international assignments that began with her role in establishing acute flaccid paralysis surveillance in the tribal areas of Pakistan. From 2001-2005 she was seconded to the World Health Organization to lead the polio eradication programs in Somalia and South Sudan. In 2006, she was detailed to the American Red Cross to lead the Measles Initiative, a partnership providing technical and financial support to more than 75 countries to reduce measles mortality. Most recently, she served as a Deputy Director for the Center of Global Health overseeing policy, strategy and communication for CDC's USD2 billion portfolio of global health programmes operating in more than 60 countries. During this time, Ms. Christie deployed repeatedly as the lead or deputy of CDC's Ebola response teams in Liberia and Sierra Leone. Ms. Christie has received dozens of awards for her service including the Watsonian Public Health Advisor of the Year, the Secretary's Award for Distinguished Service, and the American Red Cross' Spirit of Excellence. Ms. Christie received her master's degree from Columbia University.

Frank Mahoney

Frank Mahoney is an infectious disease epidemiologist seconded by the Global immunization Division at CDC to the Health Department at the International Federation of the Red Cross and Red Crescent Societies. He received his Medical Degree from the University of Texas Medical School in Houston and completed a residency in Family Medicine at Baylor University in the Texas Medical Center. He joined CDC in 1989 as an Epidemic Intelligence Surveillance Officer and completed a Preventive Medicine Residency in 1992. He has worked on a variety of assignments throughout his career with a focus on emerging infectious diseases and immunization.

In the past year, he was the CDC team lead for Ebola response in Nigeria and Liberia. Prior to the Ebola outbreak, he was the CDC team lead for polio eradication efforts in Nigeria. Between 2007-11,he was head of the CDC office in Indonesia and worked on avian influenza. Prior to that assignment, he worked for 10 years in the Middle East Region including four years at the Eastern Mediterranean Regional Office of WHO and 6 years with the United States Naval Medical Research Unit No. 3 in Cairo. He is a member of the Eastern Mediterranean Regional Office Technical Advisory Group on Immunization and the author of numerous scientific publications and book chapters. He is a member of the Infectious Disease Society of America and the John Snow Society and is an adjunct faculty member at the Rollins School of Public Health, Emory University.

Dr. Naveed Sadozai

Naveed Sadozai has worked in the field of Public Heath for almost 30 years, including 10 with UNICEF and the rest with WHO. His experience with polio dates back to 1994, starting with his role as Child Health Officer in the UNICEF country office in Pakistan, where he served as focal person for all polio campaigns until he joined WHO in South Sudan in late 1998 as the first dedicated team lead for polio at the end of 1998. From 1999-2005, Naveed served as the first-ever polio team leader for Afghanistan. He established the management infrastructure in a war-torn country and orchestrated the implementation of large-scale NIDs, including the development of all necessary capacity and systems. From June 2005, Naveed served at WHO headquarters in Geneva as a member of the polio country support team. He was focal person for the Indonesian outbreak (2005-06) and later acted as focal person for Nigeria for two years. In this latter capacity he focused primarily on the northern part of the country and was instrumental in orchestrating engagement of traditional leadership in polio programme implementation. Over the past twelve years Naveed has also provided technical guidance and support to the Pakistan polio programme as and when required. More recently, Naveed served as WHO focal person for the polio outbreak in Northern Syria where he was able to identify and develop capacity and management infrastructure for remote implementation of both SIAs and third-party monitoring. He has also helped manage a number of other outbreaks, including in Tajikistan, Turkmenistan and the horn of Africa. During his final 2-3 years with WHO headquarters, Naveed continued to serve as focal person for guiding the implementation of polio eradication programmes in security compromised areas and also helped develop transition strategies for polio. Since his retirement in 2017, Naveed has continued to support the northern Syria and Pakistan programmes through his work with the Bill and Melinda Gates foundation

Professor Fredrick Were

Fredrick is the Dean of the school of Medicine, and Professor of New-born Medicine at the University of Nairobi, Kenya. He is also the Chief Research Adviser of The Kenya Paediatric Research Consortium, an NGO operated under the auspices of The Kenya Paediatric Association (child health professionals). He received his undergraduate medical degree and paediatric postgraduate training at the University of Nairobi. Between 1991 and 1993 he undertook a new-born medicine fellowship training at Monash University/Medical Centre in Australia. He joined the University of Nairobi as a lecturer in 1994, where in addition to teaching he enrolled in a PHD programme, graduating in 2007. He is currently in the process of enrolling for a second PHD in Global Health at Geneva University, Switzerland. Professor Were served as a National Chairman of The Kenya Paediatric Association (2002-2012) and Committee member of the World Association of Perinatal Medicine (2008-2011), the International Paediatric Association and The International Society of Tropical Paediatrics (Chair), among many others. Frederick is current president of the Eastern African Paediatric Association and Chair of the oversight committee of the Network for Education and Support in Immunization. His current advisory roles include as Chair of the National Immunization Technical Advisory Group and Chair of the Polio Certification committee, in Kenya. He is a Regional member of the Africa Technical Advisory Group for Polio and Member of the WHO Global Strategic Advisory Group of Experts on immunization.

Katie Hayes (Review Team Support)

Katie Hayes is a member of the Secretariat of the Independent Monitoring Board for Polio Eradication and the Polio Transition Independent Monitoring Board, based at the London School of Hygiene and Tropical Medicine. In continuation of her previous role at WHO, in which she served as part of the Patient Safety and Quality of Care Secretariat with responsibilities for research, communications and knowledge management, she continues to contribute to projects related to that field. Previously, Katie served in various roles with non-governmental organizations, including managing a street children rehabilitation project in Togo, as well as other youth-focused initiatives in Tanzania and the United Kingdom. She completed her degree in Anthropology and International Development in 2014, at Sussex University in the United Kingdom.

Annex 2: List of locations visited

Country	Locality
Afghanistan	Kabul
	Kandahar City, Kandahar Province
	Loya Walla District, Kandahar City, Kandahar Province
	Spin Boldak, Kandahar Province
	Jalalabad, Nangarhar Province,
	Behsud District, Nangarhar Province
Pakistan	Islamabad
	Quetta, Balochistan
	Hazarganji Union Council, Quetta, Balochsitan
	13 Series Union Council, Quetta, Balochistan
	Chaman Tehsil, Killa Abdullah, Balochistan
	Gulistan-II Tehsil, Killa Abdullah, Balochistan
	Peshawar, Khyber Pakhtunkhwa
	Kohat, Khyber Pakhtunkhwa
	Torkham, Khyber Agency
	Karachi, Sindh
	Union Council 4, Gadap, Karachi, Sindh
	SITE Town, Karachi, Sindh
	Baldia Town, Karachi, Sindh
	Hyderabad, Sindh
Nigeria	Abuja
	Kaduna, Kaduna State
	Maidugari, Borno State
	Monguno, Borno State
	Ngala, Borno State
	Kano, Kano State
	Sumaila, Kano State
	Ungogo, Kano State
	Dala, Kano State