

22

TWENTY SECOND REPORT

CLOSING IN ON ZERO

ADAPTING TO COMPLEXITY AND RISK ON THE PATH TO END POLIO

INDEPENDENT MONITORING BOARD
GLOBAL POLIO ERADICATION INITIATIVE

SEPTEMBER 2023

INDEPENDENT MONITORING BOARD

The Independent Monitoring Board (IMB) provides an independent assessment of the progress being made by the Global Polio Eradication Initiative (GPEI) in the detection and interruption of poliomyelitis (polio) transmission globally.

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Dr Pate did not attend the most recent IMB meeting consequent on him becoming Minister of Health and Social Welfare in Nigeria. The IMB chair, members and secretariat warmly congratulate him on his new appointment. Further, they wish to pay tribute to his massive and invaluable contribution during his time on the IMB. Although his new post means that he will no longer be a member of the board, the IMB looks forward to ongoing contact and discussions as part of his new role in Nigeria.

The IMB's reports are entirely independent. No drafts are shared with the Polio Programme prior to finalisation. Although many of the data are derived from the GPEI, the IMB develops its own analyses and presentations.

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INTRODUCTION

INTRODUCTION

This is the 22nd report of the Independent Monitoring Board (IMB) for the Global Polio Eradication Initiative (GPEI). The Board has operated over the past 13 years. It has assessed and analysed progress with polio eradication and made recommendations to the Polio Oversight Board (POB) and, through this body, to the Polio Programme and to the wider partnership that has been working to achieve polio eradication.

The IMB is not a technical body. It analyses the weaknesses and deficits in the Polio Programme's functioning at country, national and global level. It invites country delegations to its meetings to explain and account for their performance. Such delegations have usually been led by a health minister and senior government officials and are accompanied by the country's senior polio technical team members.

At times, IMB reports have made uncomfortable reading for the countries still struggling to interrupt poliovirus circulation, and for the leaders of the Polio Programme at global level. The

IMB's independent "without fear or favour" and "speaking truth to power" way of operating has helped to increase accountability for polio eradication and to focus attention on the need to manage performance tightly. Both of these essential management functions – accountability and performance management – are not inherent features of most global health programmes.

Over the years, an enormously valuable role in assessing the Polio Programme's progress, complementary to the IMB's, has been played by the Technical Advisory Groups (TAGs). The groups remain an essential part

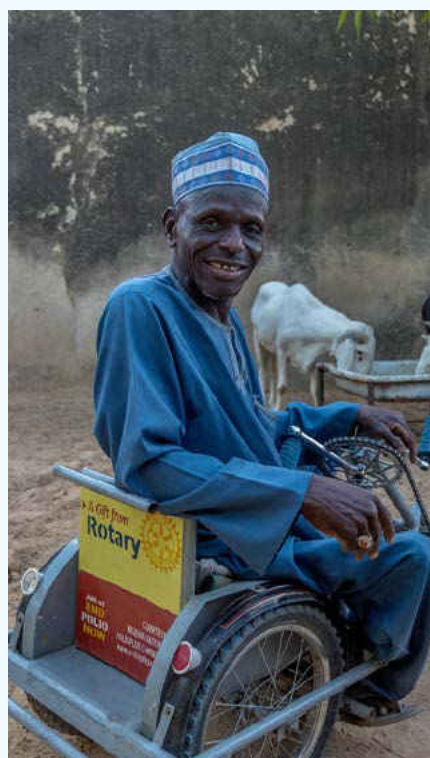


of the Polio Programme’s governance structure. They are advisory to country programmes and their membership comprises global and national experts. Unlike the IMB, their secretariat is provided by the GPEI partnership.

The IMB’s perspective on polio eradication now spans more than a decade and has involved deep exploration of the reasons for the lack of programmatic progress. The roots of the Polio Programme are in a technical, communicable disease control tradition with well-tried, evidence-based tools coupled with clear and well-established data sets.

From the outset, the IMB has endorsed the great importance of excellence in technical delivery but has also pressed very strongly for the Polio Programme to take account of the wider determinants of its performance. These can broadly be described as the “human factors” in polio eradication.

When the IMB was formed, more than 90% of the burden of paralytic polio in the world had been reduced, but for years there had been little change. This performance was a deep concern and reflected three things. First, many of the human factors areas



(e.g. communities' resistance, political misalignment, male-dominated vaccination teams) had become mission-critical, yet the Polio Programme had not come to terms with their importance. Second, the operating environment in the remaining polio countries had become much more complex and challenging, and what had been successful in the past in other places was not working. Third, the programme was clinging too tightly to a vertical delivery ethos and failing to see the value of a mixed methods style of working and bringing in some integrated approaches. This tendency towards intransigence was coupled with a highly positive public "almost there" narrative, that was close to magical thinking.

In 2018, the Polio Programme, emboldened by positive poliovirus epidemiology, declared itself on the brink of interrupting wild poliovirus circulation. Around this time, an IMB-commissioned field visit to the endemic countries by experts recorded a long list of serious concerns. This dissonance of perspectives ended badly, with large outbreaks of wild poliovirus in Pakistan and Afghanistan and an intercontinental surge, a few years later, of almost a thousand vaccine-derived poliovirus cases with its epicentre in Nigeria (which had recently been certified polio-free). The latter confirmed what had been clear for some time: vaccine-derived poliovirus needs to be regarded as having parity with the wild

poliovirus in its potential to harm children.

The evolution, over the last decade, of a Polio Programme that has failed to meet the numerous deadlines that have been set, carries a clear lesson for the current situation, where once again, leaders of the Polio Programme believe that interruption of poliovirus transmission looks possible. That lesson is that polio will only be eradicated if the Polio Programme addresses all the domains requiring strategic and operational focus: technical; community engagement; national and local political commitment and alignment; and geopolitics.

As will be apparent from reading this 22nd IMB report, every single one of these four domains contains a complex range of factors, all of which influence the performance of the polio eradication programme. A Polio Programme alive to their importance and addressing them through careful scrutiny of data, open and inclusive discussion and planning, combined with carefully structured action, will be on the right path to succeed. Alternatively, a Polio Programme that is selective in what it tackles, dismissive of the need to work on the human factors, and ducking the most difficult, intractable obstacles will be doomed to keep revisiting failure.



A young child stands in a dusty, arid environment, looking to the right. The child is wearing a brown jacket and is positioned in front of a wall made of mud-brick. The background shows more of the same environment, with a dirt path and some sparse vegetation. The overall scene is one of a rural, arid setting.

THE POLIO ERADICATION STRATEGY: **MID- TERM REVIEW**

THE POLIO ERADICATION STRATEGY: MID-TERM REVIEW

The *Polio Eradication Strategy 2022-2026*, *Delivering on a Promise* set 2023 as a target year to interrupt all remaining type 1 wild poliovirus transmission (Goal One) and circulating type 2 vaccine-derived poliovirus transmission (Goal Two) with the aim of reaching eradication by 2026.

The strategy made a commitment to undertake a robust review during the course of this year, to evaluate whether the promised outcomes were on track or not.

This IMB report, which is part of its normal cycle of independent assessments of the polio eradication programme, will inter alia provide that mid-term review.

The terms of the review are for the IMB to:

- Determine whether the strategic plan is on track, at risk, off track, or will be missed;
- Identify and evaluate the quality, implementation, and impact of required corrective action plans, and propose enhancements or new strategies where necessary.
- Evaluate progress towards interruption and eradication Goals One and Two of the *Polio Eradication Strategy 2022-2026*;



OVERVIEW AND SITUATION REPORT

OVERVIEW AND SITUATION REPORT

The IMB has reviewed all the routinely available data on the Polio Programme, read the main current polio reports, and received extensive presentations from the programme's leadership and teams at global, regional and country level. At its July 2023 meeting, the Board was involved in wide-ranging discussions with the GPEI leadership, delegations from the key affected countries, donors and wider polio partners.

Increasingly, the goals and aspirations of polio eradication and polio transition are intertwined and interdependent. A few weeks before the IMB meeting, the Polio Transition Independent Monitoring Board (TIMB) met with a similarly rigorous series of presentations, discussions and progress reviews. Prior to that, the TIMB secretariat and chair had extensive discussions with those able to provide valid information on the status of the 20 polio transition countries.

Readers of this 22nd IMB report will find value in the 6th TIMB report (*Ambiguities and Certainties: Meeting the diverse expectations of polio transition*) if they wish to understand the roles that polio transition is playing in helping to achieve the interruption of poliovirus transmission, and thereafter to secure and sustain a polio-free world. This TIMB report also examines polio transition more widely, including: its purpose; its future role; capacity and capability; and funding needs.

ENDEMIC COUNTRIES

At the IMB meeting in July 2023, the GPEI leadership gave a confident and positive assessment of progress and prospects for the polio-endemic countries.

The strong features that they felt signalled that the journey to end transmission of wild poliovirus globally was almost complete included that:

- The traditional “reservoirs”, for so long appearing impossible to completely clear of wild poliovirus – such as Karachi, Khyber-Peshawar, Quetta Block, Kandahar – have been free of endemic transmission for periods in excess of a year, in some cases even longer;
- The number of genetically different poliovirus transmission chains reported at the time of the IMB meeting in July 2023 had also sharply reduced to two genetic chains in Pakistan, and one in Afghanistan;
- The programme’s heightened surveillance strategies, such as increased environmental monitoring, more frequent testing and ongoing critical reviews, have led to more rigorous detection, even as the instances of transmission have reduced;
- Wild poliovirus cases were restricted to only seven

districts of south Khyber Pakhtunkhwa province in Pakistan and to one province of east Afghanistan; however, there were environmental detections in Karachi and Lahore in 2023 (though no re-established transmission) and, in Afghanistan, also in Kunar, Kandahar, and Balkh (data as of 31 July 2023).

- The capacity of the Pakistan Polio Programme to prevent any re-establishment of transmission in historical reservoirs has been demonstrated;
- Two environmental sites (Sangi Qala and Batikot) in

east Afghanistan were the only two locations in that country with persistent detections of poliovirus transmission;

- Access in Afghanistan is at its best since 2018, and there have been recent improvements in the penetration and quality of vaccination in the east;
- The engagement of neighbouring countries and regional partners, such as Saudi Arabia, Iran, Qatar, and the United Arab Emirates, is greatly supporting polio eradication.



At the July 2023 IMB meeting, there was a sense of disappointment, within the Polio Programme, that wild poliovirus transmission survived the low season.

There was also keen awareness among the GPEI leadership of the risks of the seemingly positive trajectory towards interruption of transmission in the polio-endemic countries being disrupted. Those perceived risks include: ongoing security problems in south Khyber Pakhtunkhwa (restricting access and missing children); the re-establishment of poliovirus circulation in south Afghanistan, particularly in Kandahar City; poliovirus circulation becoming re-established in Quetta Block; the loss of vaccine campaign commitment, timeliness, frequency or quality in east Afghanistan; and very low essential immunisation coverage in parts of both endemic countries.

Reaching persistently missed children in high-risk districts of south Khyber Pakhtunkhwa and east Afghanistan is of the utmost importance. Approximately two million children live within these high-risk regions, and an estimated 300,000 of them have been consistently missed by vaccination activities.

In Afghanistan, the primary areas of concern for the Polio Programme have been the east and south of the country.

In the east, attacks on frontline workers led to a prolonged period of suspension of vaccination campaigns, resulting in polio cases. Two environmental sites have reported persistent detections of poliovirus transmission. The response actions have been largely positive, while vaccination campaign quality has also improved leading to an estimate of over 90% population immunity.

In the south, restrictions on the use of house-to-house campaigns have seriously impaired the effectiveness of actions to achieve high polio vaccination coverage. Despite the reported reduction of inaccessible children, there is still a large population of children that are not being reached by the site-to-site modality. In particular, a growing pool of susceptible children in Kandahar City heightens the risk of a large outbreak. There was an environmental detection in Kandahar in May 2023.

Despite all its substantial challenges, the Polio Programme in Afghanistan has progressed to better performance in endemic zones and in outbreak responses. Laboratory poliovirus characterisation confirmed the elimination of all but one type 1 wild poliovirus genetic cluster in the country.

Geographically restricted, endemic transmission, in the east, did continue during the last low season. The wild poliovirus was

exported from this region into the Khyber Pakhtunkhwa and Punjab provinces of Pakistan. Setbacks in Afghanistan pose dangers for Pakistan (and vice versa), given the long-established patterns of poliovirus travel across the northern and southern transmission corridors.

The Polio Programme in Afghanistan continues to face great complexity in its operating environment. The ongoing humanitarian crisis is the dominant feature, along with associated political instability, severe economic contraction, high levels of malnutrition, and insecurity. Persistent endemic poliovirus transmission in east Afghanistan, along with the risk of amplification in Kandahar, are the main threats to stopping the wild poliovirus in this country.

In Pakistan, various factors are still contributing to the complexity of the polio situation, including shifts in the political landscape, overall rates of immunisation, poor sanitary conditions, and insecurity.

The south districts of Khyber Pakhtunkhwa province continue to be places of endemic transmission. In 2020, the country achieved a substantial overall reduction in polio cases; however, a setback came in 2022, especially in Khyber Pakhtunkhwa. In 2023, there was a decline in reported cases, although some environmental samples (and a subsequent case after the IMB meeting) still indicate the presence of the



wild poliovirus in the south of this province, now referred to as the “endemic area.” As a result of environmental testing, a wild poliovirus strain originating in Afghanistan was identified, emphasising the ever-present risk of cross-border spread.

A positive environmental sample in Karachi, in May 2023, was also unexpected because this big city, a traditional polio hotspot, had been poliovirus-free for approximately one year. This immediately raised concerns about whether campaign quality and vaccine coverage were providing the level of resilience for Karachi to withstand

poliovirus importations that could lead to re-established transmission. It was an orphan virus, an unwelcome reminder of the programme’s vulnerability.

The Pakistan Polio Programme’s most recent focus has been on the 69 most at-risk councils in south Khyber Pakhtunkhwa. Language-matched vaccination teams are being deployed to enhance community engagement, particularly in the Pashtun population. Integration of polio vaccination with broader health care provision is underway. Overall, in this province, community-based approaches are being increasingly used

to encourage local leaders to support the Polio Programme and its aims.

The IMB has expressed concerns about potential disruption to the Pakistan Polio Programme before, during and after forthcoming national elections. GPEI and Pakistan government leaders, who attended the July 2023 IMB meeting, gave strong assurances that they have already taken steps, as a priority, to secure the continuity of programme operations during the election period and as part of the government transition arrangements.

OUTBREAK COUNTRIES

The story presented to the IMB for vaccine-derived poliovirus was also one of improvement. By July 2023, the number of cases, transmission chains and infected districts were all reported to be reducing.

While the GPEI leadership is pointing to progress, it acknowledges the challenges that countries face in implementing effective outbreak responses. The timeliness of response and campaign quality need substantial further improvements. Large-scale campaigns with bigger target populations have been

introduced, but better and faster responses also remain a priority. Strong surveillance to enable timely identification of the poliovirus is essential to effective outbreak control. The *Global Polio Surveillance Action Plan 2022–2024* set a target of 35 days for the notification of a detection. The only two countries in the world meeting that target are Afghanistan and Pakistan.

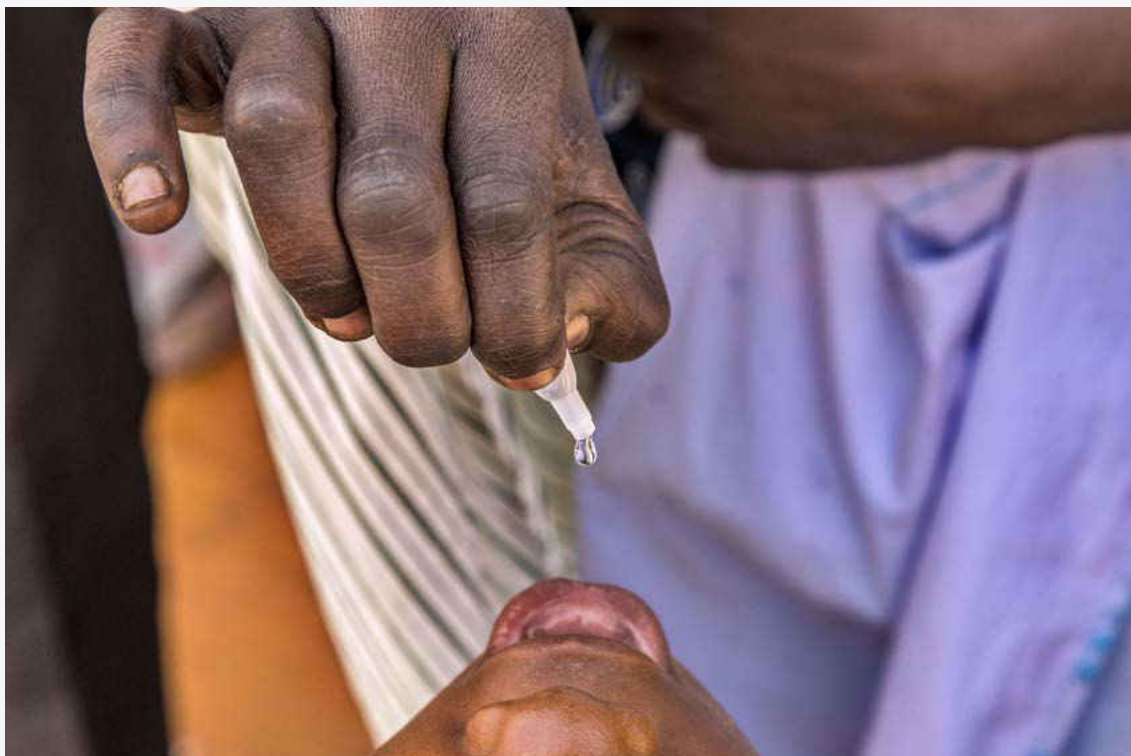
There is an increasing concentration of vaccine-derived polioviruses in a small number of “consequential geographies”, which is where the Polio Programme is focusing much of its attention and concern. They are: the eastern part of the Democratic Republic of the Congo, north-

western Nigeria, south-central Somalia, and northern Yemen. Nigeria has been responsible for the infection of 23 countries. The Democratic Republic of the Congo has spread the poliovirus to another five or six countries.

The GPEI leadership told the IMB about the complex context in each of these four areas:

- Eastern Democratic Republic of the Congo:** a humanitarian emergency continues. Insecurity and armed conflict in the eastern part of the country has led to large numbers of internally displaced people. The quality of vaccination campaigns is seriously reduced by this operating environment and there is limited implementation capacity. Co-circulation of types 1 and 2 vaccine-derived polioviruses means that there must be a four-week vaccination spacing between the use of each separate antigen. Between 2017 and 2021, it took 39 immunisation campaigns to reach 66 million children. Over the last 12 months, almost 60 million children have been reached with just six campaigns. A change of approach has brought improvements in performance.
- Northern Nigeria:** steady improvements in quality have yet to reduce substantial pockets





of persistently missed children. Despite progress, transmission remains concentrated in a small number of states in north-western Nigeria. The inaccessibility contributing to these challenges is rooted in insurgency, banditry and kidnapping.

- **South-central Somalia:** the major challenge has been inaccessibility in areas under the control of al-Shabaab. Low-level vaccine-derived poliovirus transmission has been unbroken since late 2016. Between the start of 2022 and the end of the first quarter of 2023, the

number of inaccessible children has been reduced from just under 600,000 to around 90,000. Reaching all persistently missed children is the core target.

- **Northern Yemen:** another humanitarian emergency. There has been an explosive outbreak of vaccine-derived polio in the northern part of the country. No form of immunisation activity has been possible since it began in late 2022. The Houthi authorities in Sanaa have not been prepared to sanction any vaccination response (for polio, measles or any other outbreaks). Many

planning activities have been underway, but little actual implementation.

Internally, the GPEI faces challenges regarding prioritisation frameworks and resource allocation. There is running debate about the balance between preventive measures and outbreak response, as well as how to allocate resources between activities aimed at each of the two strains of vaccine-derived polio. There has been some beneficial shift in the epidemiological curves, and the focus is on maintaining and intensifying this trend.

A person wearing a dark, long-sleeved tunic is seen from behind, carrying a large, multi-colored sack on their head. They are standing in a muddy, brown field. The background shows some green foliage on the left and a dirt path leading away. The overall scene suggests a rural or agricultural setting.

DEEPER ANALYSIS: ENDEMIC COUNTRIES

DEEPER ANALYSIS: ENDEMIC COUNTRIES

PAKISTAN

A resurgence of wild poliovirus in 2022 led to a burst of cases, primarily in south Khyber Pakhtunkhwa, which spread to other areas. Concerted efforts towards the end of the year successfully contained it.

The challenges to completely interrupting wild poliovirus transmission in Pakistan, as scheduled by the end of 2023, are formidable.

There are still detections occurring in south Khyber Pakhtunkhwa in a hugely complex operating environment. The root causes of the barriers to sustainable further gains are

quite profound, including severe insecurity and large numbers of boycotts of the Polio Programme in response to unmet wider demands by communities and interest groups.

This last reservoir of endemic polio in Pakistan is an area fraught with complexities and challenges that make polio eradication tough. The resilience, bravery and innovative efforts of the Polio Programme workforce, particularly the frontline workers and security personnel, operating under these difficult circumstances, have been laudable.



CONSISTENTLY ACHIEVING HIGH-QUALITY CAMPAIGNS IN SOUTH KHYBER PAKHTUNKHWA IS A STRUGGLE

In the south of Khyber Pakhtunkhwa province there have been multiple campaigns to reach the children who have been persistently missed. IMB sources report that every campaign has been a struggle, with children being missed; for example, 5,000 were missed in the March 2023 campaigns, but the number jumped to 30,000 in May 2023.

In three of the critical districts – Tank, Lakki Marwat and Bannu – progress has been made, showing a

slight increase in immunity estimates. This suggests a higher proportion of children protected against polio. Conversely, in North Waziristan, South Waziristan and Dera Ismail Khan, immunity has shown a marginal decline during the same period.

All the recent attention has focused on making a breakthrough in the province's 69 most at-risk councils. In a strategic shift, the Polio Programme in Pakistan has decided to do monthly polio campaigns and focus on reaching consistently missed children through a more targeted approach.



This new plan involves delivering essential immunisation, along with an additional dose of the oral polio vaccine, to children in specific communities. The aim is to build up the immunity profile of children in these remaining areas and reduce the overall burden of the disease. The initiative is being led by the essential immunisation programme and includes incentives for parents like pain relief medication and soap.

The strategy's potential is the ability to give polio vaccination additional reach and acceptability by incorporating other integrated service components.

Estimates reveal a significant gap in coverage, with an alarming 60,000 children being missed (in reality, likely to be higher) in south Khyber Pakhtunkhwa, excluding those who are in the Mehsud belt. The latter is a vast region covering some of the high-risk districts where vaccination campaigns have been unattainable for a long time. There was hope that the Mehsud belt area would become more accessible earlier in 2023, but it did not.

A “ring-fencing” strategy, surrounding the Mehsud belt, has helped to deal with some of the inaccessibility problems. People entering or exiting the area have been successfully vaccinated. However, there are concerns about the effectiveness of the health camps that have been used to achieve higher coverage. They are not systematically covering settlements, but



rather choosing locations for security convenience. The goal is to continue the work, while ensuring that the approach reaches the targeted children more effectively.

Data analysed by the Technical Advisory Group highlighted an adverse trend in south Khyber Pakhtunkhwa, whereby over 60% of refusals are attributed to missed visits to households or incomplete vaccination within the visited households. Other assessments put the

proportion closer to 75% to 80% of children being missed by polio vaccination teams.

Again, the reasons cited are wide-ranging and encompass insecurity, boycotts, clustering of refusals and frontline teams missing houses or children within houses. These difficulties have persisted across the last 10 rounds of vaccination, pointing strongly to systemic management weaknesses that must be addressed urgently.

OVER 200 BOYCOTTS OF POLIO VACCINATION CAMPAIGNS IN KHYBER PAKHTUNKHWA: VERY COMPLEX TO RESOLVE

The emergence of boycotts of polio vaccination is a worrying development. Despite an earlier IMB report that warned about the risks of this phenomenon and gave examples, boycotts have received less attention compared to other root causes of programmatic failures.

There were 218 active boycotts in Khyber Pakhtunkhwa province in January 2023. This is a staggering statistic. Three quarters were eventually successfully resolved but their resolution required a great deal of time and effort from the province’s Chief Secretary.

Boycotts happen when people, who know that the government is very serious about polio eradication, use their agreement to vaccination as leverage to get their demands met.

For example, in Bannu West Block in North Waziristan, Khyber Pakhtunkhwa province, there was a campaign by the Pashtun leadership for the community to share in a gas and oil discovery described as containing the country’s largest hydrocarbon reserves. The law says that where there is a well-head, the authorities are bound to give gas to places within a specified radius of where it was discovered. This was not possible because the route of the gas pipeline passed through other places. The ruling caused great anger.

Analysis of recent boycotts showed that 31% were linked to job-related concerns, while another 16% were triggered by grievances about lack of basic necessities such as health care, electricity and water supply. These critical infrastructure needs play a significant role in shaping the communities’ perceptions and attitudes towards polio vaccination campaigns. Approximately 40% of boycotts were associated with multiple demands, ranging from land disputes to the lack of mobile phone networks, illustrating a complex web of challenges faced by these communities.

While boycotts are driven by very specific local problems, they also reflect the broader socioeconomic disadvantage that influences attitudes and experiences in everyday lives. This eventually plays out in negativity towards the polio vaccination programme. Addressing these complex dynamics requires a comprehensive approach that engages with the diverse concerns and needs of the communities involved. Providing clean water and improved sanitation has great potential to reduce both resistance to vaccination, and increase resistance to infection; the IMB has been making this point for a long time and reiterates that it is not too late to scale up action in this area.

COMPLEX SECURITY CHALLENGES IN SOUTH KHYBER PAKHTUNKHWA: NO EASY SOLUTIONS

In south Khyber Pakhtunkhwa province, programmatic stability is fragile in the presence of threats from insurgency, tribal conflicts and political unrest. These factors, together with a difficult terrain, create a hostile and unsettling environment, making it incredibly difficult for local law enforcement authorities to maintain control.

Beyond the immediate threats of violence, underlying poverty, lack of education and limited opportunities for the person living in such communities can fuel resentment and draw some people into the orbit of extremist groups. This background, combined with the challenges of border security linked to both human and narcotics trafficking, weave together to form an enormously complex security situation. The operation of the Polio Programme must be seen in this context if solutions to the current performance problems are to be found.

The picture painted is not uniform across the entire region, with localised factors playing an important role. Government, military, and international collaboration continues to be vital in navigating this landscape, and the situation remains fluid, reflecting ongoing work to build peace and stability in this part of Pakistan.



The effect of the security situation on the Polio Programme in south Khyber Pakhtunkhwa can be tangible and immediate. Brave health workers, giving polio vaccinations, face blocks in accessing areas where their presence is most needed. Real and present dangers of violence and refusal surround them, compounded by misinformation about, and mistrust of, vaccination campaigns. Insecurity has led to loss of campaign quality, including instances of the fake finger marking of children.

One programme leader who attended the July 2023 IMB meeting spelled out the practical realities:

“Our plans are typically for three plus two days. But if there is a security operation happening, they might tell us to finish it in just two days. And because of that, the quality of our campaign is compromised. Another issue is when we enter areas with a large number of police and just one polio team, there are many logistic arrangements to be worked out. This causes delays and we have less time to implement the campaign because we have to leave early. This means we cannot do second visits as effectively. But what is even more important, is that when we conduct a campaign in an atmosphere of fear, where people are vigilant about their surroundings and are rushing, it’s very challenging. My admiration goes to the frontline workers. It is their resilience that, despite all this fear, despite being females, despite serious intimidation, the campaign is not stopped in those areas.”

In addressing and resolving the security situation, the government’s work is hindered by multifaceted challenges rooted in historical, cultural and political complexities. Achieving sustainable solutions requires an astute understanding of local dynamics and often involves delicate negotiations and engagements at various community levels.

Authorities try to use a balanced approach, combining essential security measures with extensive community outreach and relationship-building. Key strategies include active programmatic coordination with law enforcement agencies, comprehensive risk assessments and sincere engagement with local leaders and influencers.

The Polio Programme has shown considerable adaptability. Its strategic response includes house-to-house vaccination drives, language-matched vaccination teams, and customised micro-plans that are sensitive to the cultural and societal needs of south Khyber Pakhtunkhwa. Integration with

other essential health care services has been a strategic move to build community trust, make the polio vaccine part of a portfolio of benefits and simultaneously enhance overall health outcomes.

ENSURING NO RE-ESTABLISHED TRANSMISSION IN WILD POLIOVIRUS-CLEARED RESERVOIRS OF PAKISTAN

If wild poliovirus transmission is to be stopped in Pakistan, the remarkable recent achievement of clearing long-established poliovirus reservoirs and sanctuaries in the country must also stand the test of time. There has to be no hiding place left for any poliovirus in these large and complex areas.

The most polio-vulnerable area in Sindh province is Karachi because of its demography, its size, its migration patterns, its past reluctance to address some of the programmatic cultural barriers and its long history of intractable poliovirus transmission. In the light of this, the reduction of poliovirus transmission in Karachi has been formidable. However, amid these gains, a lingering concern arises from the discovery of a positive environmental sample in May 2023. It is estimated to have been circulating undetected (an “orphan” virus) somewhere in the environment for approximately four years.

The devastating flood, in 2022, in Sindh, resulted in the migration of a large population from the various districts of the province to Karachi. The city was saved from that flooding and people moved to it as a safe haven. Also, during the last two years, many Afghans have settled in Karachi. Roughly estimated, there are three to four million Afghans living there.

While the local Polio Programme has been transformative in Karachi, there is still substantial community resistance. For example, in very poor slum areas of the city, communities are resentful about the pressure to administer a polio vaccine to their children when they do not have clean drinking water, adequate sanitation, schools or general health facilities available in their neighbourhood.



The intensive work of the polio team in Karachi and of social mobilisers has helped the general level of immunity in the population to reach unprecedented levels, but continued attention is needed on districts where vulnerabilities exist.

QUETTA BLOCK IS CONSIDERED PARTICULARLY VULNERABLE TO RE-ESTABLISHED TRANSMISSION

The polio context in Baluchistan province has some similarities to Khyber Pakhtunkhwa, including

the level of persistently missed children, refusals and zero-dose children. The security situation has worsened with back-to-back attacks targeting security personnel in the region.

Despite this, at the time of the July 2023 IMB meeting, Baluchistan had managed to remain polio-free for over 22 months.

The proximity of Quetta to Afghanistan makes it an entry zone for the re-emergence of the virus. Quetta's polio defences have yet to face a similar level of

challenge to those experienced by the cities of Karachi and Lahore.

Collaboration with neighbouring countries, particularly Afghanistan, is key to Pakistan's capability to ensure that the wild poliovirus does not re-enter from across its borders. The interconnectedness of polio eradication activities demands close country cooperation on the shared goal of a polio-free future.



AVOIDING POLIO PROGRAMME DISRUPTION AND DISCONTINUITY BECAUSE OF THE FORTHCOMING PAKISTAN ELECTION

A general election, as is intended in Pakistan towards the end of 2023, has in the past disrupted political consensus on health matters. Opposing parties tend to focus on them in compelling campaign messages and vote-winning promises. This introduces possible additional layers of complexity to the public's perception of polio eradication.

The IMB has been strongly reassured that the current high level of political commitment and breadth of support for polio eradication will withstand the election period. The firm belief is that political consensus will remain intact.

If this assurance on political commitment and consensus holds true, the Polio Programme's election difficulties are therefore likely to fall on the organisational and logistics side.

Through coordination with law enforcement agencies, the Polio Programme in Pakistan has established communication channels, conducted risk assessments and provided security escorts for vaccination teams. Yet, the volatile security situation in certain regions demands ongoing vigilance and adaptability to ensure successful immunisation campaigns and the safety of frontline health workers.

The elections bring additional security challenges and potentially redeployment of police, security and military teams to deal with election unrest and keep polling stations safe for voters. This will mean some loss of security support for polio vaccination campaigns and make close consultation important, to avoid the loss of campaign continuity.

THE ROLE OF PROVINCIAL CHIEF SECRETARIES IS PROVING PIVOTAL – THEY NEED TO STAY HANDS-ON

The pivotal role played by provincial Chief Secretaries in Pakistan's polio eradication work cannot be overstated. They handle the coordination of different departments such as health, education and law enforcement. Their job includes a variety of tasks, overseeing everything from public health to policing, and is not focused solely on health. These officials hold the top commanding position in the province's governance structure.

Provincial Chief Secretaries have been key figures in coordinating collaborative efforts between health and law enforcement entities in areas where the safety of vaccination teams is compromised. Their role in ensuring secure campaign implementation has been crucial and remains so. Additionally, their proactive participation in their province's Polio Programme and in-depth knowledge of the programme's performance is essential, especially in the face of a potential shift in political

priorities during an election year. Their in-person attendance at the July 2023 IMB meeting was much appreciated.

Their dedicated involvement and commitment during this crucial period will define the course of Pakistan's struggle to eradicate polio.

AFGHANISTAN

Over the last 13 years, the IMB has had meetings with successive governments of Afghanistan. For most of that time, the consistent barrier to stopping transmission of wild poliovirus has been inaccessibility due to restrictions imposed by those opposed to the government of the day, or related insecurity factors.

The IMB held a special session to hear the views of Afghanistan's Health Minister and Head of the Emergency Operations Centre (they were unable to attend the main meeting) and to discuss the polio situation in their country.

THE UNPARALLELED HUMANITARIAN CRISIS

Afghanistan is currently grappling with the world's worst humanitarian crisis, affecting an estimated 28.3 million individuals (as of mid-2023). That is two thirds of Afghanistan's population.

It results from decades of conflict, compounded by natural disasters and political upheaval. The displacement of populations within the country has led to



extreme poverty, lack of sanitation (triggering a large cholera outbreak), food insecurity and malnutrition, especially among children. There has been a severe economic contraction with drastic reductions in international aid and the freezing of assets.

Health care infrastructure in former conflict-affected areas has suffered immense damage and degradation, with hospitals and medical facilities struggling to provide any essential services. Departures among international non-governmental organisations due to security risks and reduced funding has further strained the health care system.

One participant at the July 2023 IMB meeting reflected:

“There was an announcement on the suspension of Swedish activities across Afghanistan yesterday. There is also the upcoming closure of the International Committee of the Red Cross hospitals. They’re running the 40 tertiary hospitals in the country and there’s no funding for those after September. Things are not going in a good direction and likely to get worse in the short term”.





Simultaneously, the Taliban's ban on numerous established organisations has led to the emergence of inexperienced and unseasoned non-governmental organisations. This fragmented and bleak health landscape has had a profoundly negative impact on the quality and availability of health services, and thus the population's health status.

The Polio Programme is trying to maintain an eradication-standard of delivery in a hugely adverse physical, social and economic environment, with a virtually non-existent broader health care base, a confluence of geopolitical headwinds, and a complex ideological context.

HUMAN RIGHTS AND IMPOSED RESTRICTIONS

The human rights situation in Afghanistan is a deep concern, particularly in respect of women and girls. The United Nations has stated that Afghanistan is the only country in the world where women's and girls' access to education is suspended.

The de facto authorities have continued to impose severe restrictions on women, affecting their freedom of movement, access to education, and participation in the workforce. Instances of violence and discrimination against women have been documented. Non-governmental organisations led by women or employing women have

faced interference, with assets seized and licences suspended.

The United Nations Assistance Mission in Afghanistan has had major challenges to its operations due to the severe restrictions on women. All Afghan United Nations staff, both men and women, have been required to work from home since April 2023 in response.

Women are permitted to work in health care if they are providing services to other women and girls. In a very fluid and changing situation, women are performing some immunisation-related health roles according to local agreements.

POCKETS OF ONGOING ARMED CONFLICT

The country is still not free of conflict, with an armed threat to Taliban and civilian targets coming mainly from an Islamic State affiliate, ISIS Khorasan (ISIS-K). The use of improvised explosive devices continues, risking civilian casualties, particularly children, who inadvertently come into contact with unexploded ordnance. Attacks on places of worship have increased, further endangering civilians. Staff delivering polio activities have been targeted in the past and there are still risks that this could happen again.

THE CRITICAL GEOGRAPHIES

Historically, Afghanistan’s polio eradication programme has identified three critical geographies: the east, the south and the south-east. At the time of the July 2023 IMB meeting, it was apparent that the situations in the east and south regions pose the greatest risks of poliovirus resurgence.

In the south-east, there have been sporadic cases in the past, but there is not a lot of environmental surveillance there, unlike the south and east. Large parts of Afghanistan have remained free of transmission for a long time, with 30 out of 34 provinces not detecting poliovirus for more than 18 months (data as of 31 July 2023).

EAST REGION: NOTORIOUSLY DIFFICULT TO INTERRUPT TRANSMISSION – THE CONTINUITY OF HIGH-QUALITY CAMPAIGNS IS VITAL

In the east region, between October 2020 and May 2022, there was no wild poliovirus detection. Thus, the region appeared free of transmission for a long period.

The biggest disruption was two back-to-back fatal attacks on vaccinators in February 2021 and then again in May of that year. Campaigns were suspended and when they resumed, it was in the mosque-to-mosque, not house-to-house, programme delivery modality.

House-to-house campaigns did start again in May 2022, but the quality was compromised because of understandable fear among frontline workers and micro-plans quickly becoming outdated. Work to improve campaign quality began only towards the end of 2022 and into early 2023.

Access to certain districts in the east region had been restricted for years due to ISIS-K actions, resulting in populations of children older than five years with no immunity. For instance, one of the polio cases in 2023 was an 11-year-old girl from a district that was inaccessible for some years because it was under ISIS-K rule.

Further, some people now residing in Afghanistan but originally from Pakistan’s Swat and Bajaur districts, though not high in numbers, resist outsiders and are not consistently vaccinated. There are also clusters of chronic refusal families in urban areas.

The east region, specifically Nangarhar province, has been the place in which all polio cases were reported in 2023. The Polio Programme has achieved an improving trend in campaign quality, a decline in missed children and an increase in the number of children vaccinated. Full house-to-house access in the east is increasing campaign coverage. Women health workers have been included in many house-to-house campaigns. This has been particularly effective in reaching missed children.

Periodically, campaigns are spaced four to six weeks apart to enable a deeper analysis to identify long-inaccessible groups of children, including those up to 10 years of age.

In June 2023, scheduled polio vaccination campaigns in the east were shelved, for unclear political reasons. This caused great consternation among the GPEI partners and other governments in the Eastern Mediterranean Region, especially given the population densities, as fears of a large polio outbreak or sustained circulation of wild poliovirus with cross-border transmission grew.

The cessation of the June 2023 campaigns appears to have resulted from demands for funds to build hospitals. Following extensive discussion with the Afghanistan Health Minister, polio vaccination campaigns resumed in late July 2023.

Historical epidemiology patterns in Afghanistan have shown long periods of persistent transmission in the east region. The poliovirus there behaves in a similar way to the way it does in the Khyber Pakhtunkhwa province in Pakistan.

In other words, once transmission gets established, it takes a long time to get rid of it. Population density contributes significantly to this. A much higher and sustained level of immunity is necessary to achieve interruption of wild poliovirus transmission in this part of Afghanistan.

That is why the major insecurity-related disruptions of vaccination campaigns in 2021 and the first half of 2022, as well as the mid-2023 suspension for political reasons, were such big setbacks.

The IMB learned that, of the five 2023 polio cases reported in east Afghanistan, by the time of its July 2023 meeting, the doses of polio vaccine received by each child ranged from 16 to 28.

The IMB reviewed WHO's official record and the precise data for each child according to which district in Nangarhar province they came from. This is



as follows: Behsud (16 vaccine doses), Nazian (21 vaccine doses), Bati Kot (21 vaccine doses), Dur Baba (22 vaccine doses), Kot (28 vaccine doses).

This is an extraordinary level of vaccination for these children to receive, only for them to then come down with paralytic polio. The IMB has been told that the vaccination tallies are "accurate".

It may be relevant that a Gavi-funded, large-scale national campaign on measles in December 2022 (also including polio), was followed by measles outbreaks in areas where there had been very heavy campaign engagement.

The Polio Programme was challenged, at the July 2023 IMB meeting, to explain to donors why their large past investments in UNICEF communications and social mobilisation activities had led to a situation in Afghanistan where 27,000 missed children in the east region could not be reached. A representative of the GPEI explained that this population of 27,000 was made up of three groups.

The first group is refugees from Pakistan who are now scattered. A second group is those who refuse on religious grounds. The third group was said to comprise government families who are not allowing the vaccination teams near

them. The teams are reported as not even recording this because they are not permitted to enter those communities.

The continued inability to vaccinate groups of children whose presence is clearly known is poor performance. It could jeopardise the goal to eradicate polio in Afghanistan, raising the risk of new outbreaks and prolonging the disease’s presence in the region.

SOUTH REGION: THE LARGEST POLIO-SUSCEPTIBLE POPULATION, AN OUTBREAK IN KANDAHAR CITY COULD BE EXPLOSIVE

The south region, which includes Kandahar, Helmand and Uruzgan provinces, has the highest concentration of susceptible children. This is because the vaccination campaign modality

has been site-to-site and mosque-to-mosque rather than the eradication gold-standard house-to-house approach.

Kandahar had an environmental wild poliovirus detection in May 2023. This suggests that wild poliovirus is actively circulating where large immunity gaps persist.

An environmental poliovirus detection in Kandahar poses a major risk, not just to Afghanistan but to each of its neighbouring countries. Polio dynamics in this country are driven by Kandahar City. If infections are controlled there, transmission tends to diminish in the surrounding areas. Therefore, containing poliovirus in this population centre is crucial for curtailing poliovirus spread throughout Afghanistan. This urgency adds immense pressure on the Polio Programme to devise and execute an effective response

strategy in the south region despite the ban on house-to-house campaigns.

The limited access to house-to-house vaccination campaigns in this region now hampers work to reach all eligible children. There is a fear on the part of the Taliban authorities of “social infiltration” (“Who’s going to the doorsteps and talking to our communities?”) leading to reluctance among certain communities towards accepting vaccination.

The mid-July 2023 polio vaccination campaign in the east was house-to-house, but the south’s campaign was planned as a mix of site-to-site and mosque-to-mosque. The IMB was told that provision was then made for a house-to-house campaign in the south, but it was reversed to site-to-site again by the Deputy



Minister of Health who was in Kandahar at the time.

As the IMB closed its meeting, the situation was described as:

“Evolving on a daily basis and spinning around wildly.”

Where the decision on delivery modalities will fall from one campaign to the next, no one seemed to know.

Women’s involvement in site-to-site campaigns in the south region remains problematic. Despite some in positions of authority in Afghanistan acknowledging the power of female vaccinators to establish trust with parents, their level of participation is still low.

To improve access to vaccinations for children and enhance the overall success of eradication in the south region, targeted action to increase women’s involvement are vital. Families’ reluctance to bring young babies to vaccination sites is a tragedy.

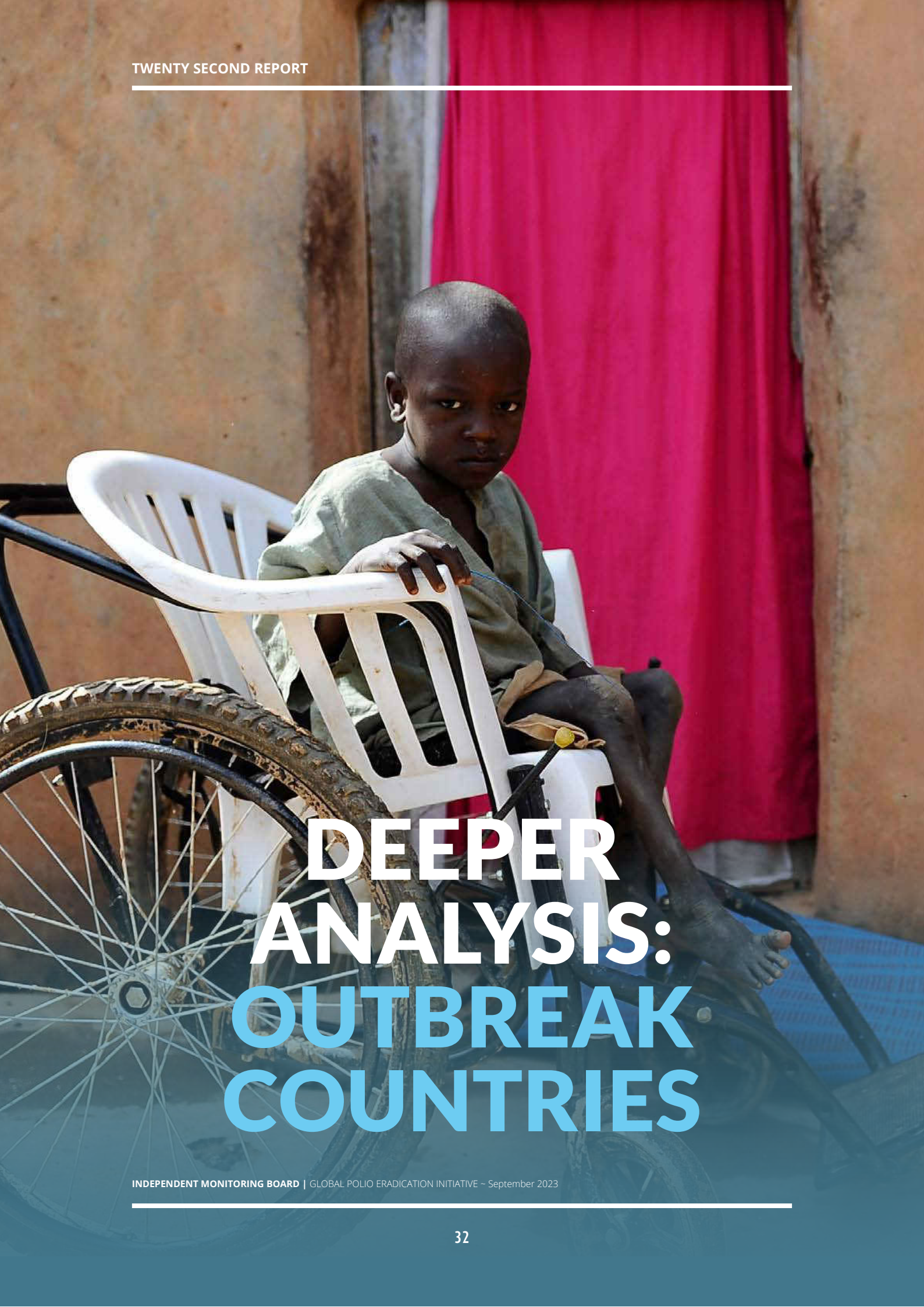
To address these challenges, within the context of a sub-standard polio eradication programme in the south, various measures are being added to the current approach including: “intensifying” site-to-site vaccination, involving local trusted individuals, and increasing essential immunisation through additional basic health units.

In Afghanistan, the Ministry of Health has a very important role when it comes to policy-making

and providing strategic directions for the Polio Programme. However, the implementation of these policies falls under the purview of the provincial governor. This makes him one of the most important people in making things happen.

The Polio Programme in Afghanistan has also focused on cross-border collaboration, community engagement and capacity-building. Rapid response teams have been established to address any polio cases promptly. Regional engagement and encouragement from neighbouring countries, such as Saudi Arabia, Iran, Qatar and the United Arab Emirates, have provided critical support and advocacy for the programme.





DEEPER ANALYSIS: OUTBREAK COUNTRIES

DEEPER ANALYSIS: OUTBREAK COUNTRIES

Since 2020, a number of factors have created major challenges for the implementation of the strategy to stop vaccine-derived poliovirus circulation.

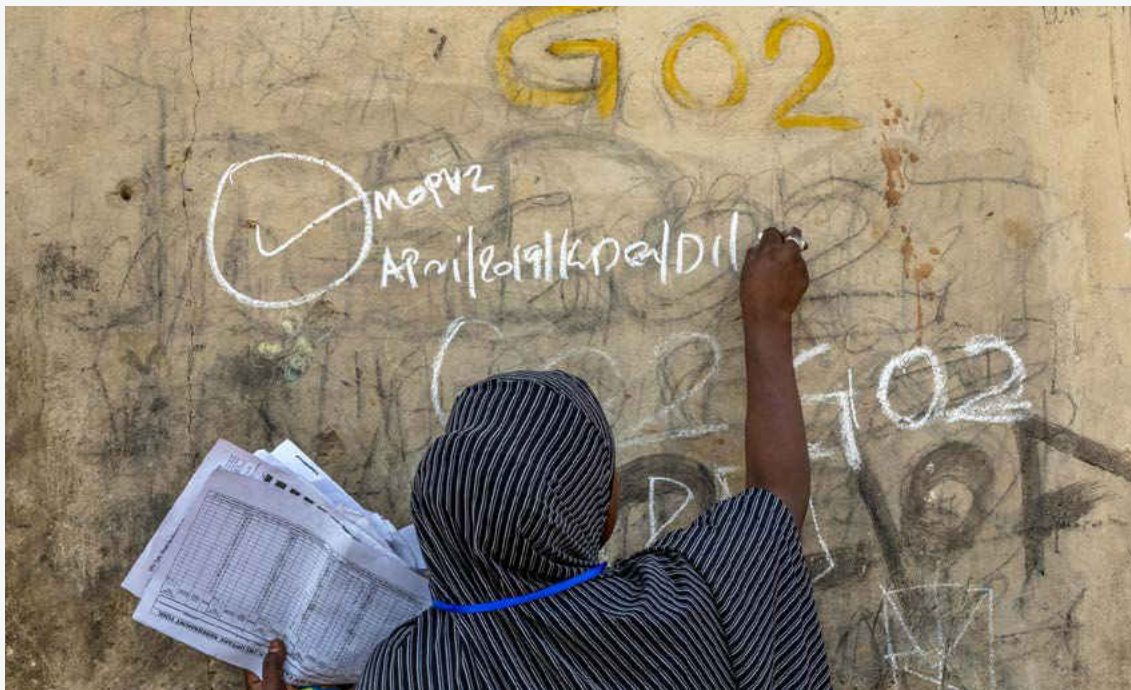
During the COVID-19 pandemic, the GPEI suspended over 60 polio campaigns, leading inevitably to an increase in cases of type 2 vaccine-derived poliovirus and outbreaks of type 1 vaccine-derived poliovirus.

COVID-19 affected surveillance, with gaps and detection lags. It impaired the Polio Programme's ability to identify risk and respond quickly. The pandemic damaged health systems more broadly, including essential immunisation programmes, contributing to a higher number of children without any doses of vaccine.

The Polio Programme largely addresses type 2 poliovirus immunity gaps after an outbreak has already been detected. It is starting "behind the curve." Most of the attention is directed towards enhancing the quality of ongoing outbreak responses.

However, there is an urgent need to reduce the immunity gap overall, including in countries that are not currently experiencing outbreaks. The approach has primarily been reactive. Vaccine supply and money problems have restricted the larger-scale responses that are badly needed.

The IMB was presented with striking technological data on the possibility of rapid direct detection of wild and vaccine-derived poliovirus. This technology has the potential to transform outbreak detection and response, enabling a near-real-time approach. It could greatly



curtail the size and spread of outbreaks. The apparent lack of urgency in rolling out this new technology to the field is disappointing. It may reflect staff becoming inured to slow timelines and missed deadlines. Could this technology be readily available, at least in the Democratic Republic of the Congo and Nigeria, within two months and certainly by the end of 2023? If not, what are the barriers that need to be broken down?

THE INFLUENCE OF PAST POLICIES AND ATTITUDES IN GENERATING THE SCALE OF VACCINE-DERIVED POLIO

The massive upsurge and wide geographical distribution of vaccine-

derived polio cases was shaped by past policies and attitudes within the Polio Programme. Historically, there has been a failure to give equal attention and respect to both sources of paralytic polio – wild poliovirus and vaccine-derived poliovirus.

Until recently, vaccine-derived disease was seen, epidemiologically, as a sideshow to the main drama of extinguishing the wild poliovirus. It was perceived as a less significant problem to be “mopped up” after the eradication of wild poliovirus.

This thinking collectively contributed to the scale of the vaccine-derived polio issue we see today. The Polio



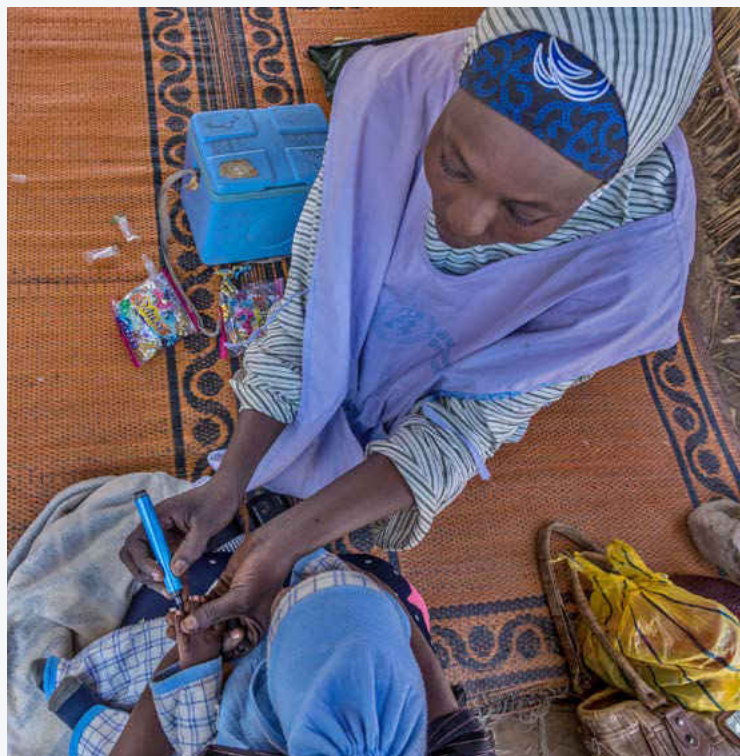
Programme was dismissive of dissenting voices.

Layered on top of this have been a series of “unforced errors.” They include: inadequate preparation for the 2016 switch from trivalent to bivalent oral polio vaccine; the abrupt reduction of polio staff in Africa; the influence on outbreak management of the high concern about the potential seeding of type 2 vaccine-derived polio outbreaks from using monovalent oral polio vaccine type 2; and the failure to fully understand the complex dynamics involved in introducing novel oral polio vaccine type 2.

A critical misstep was the lack of foresight regarding the repercussions of the 2016 “switch” of oral polio vaccines. While the oral polio vaccine has been effective against wild poliovirus, it carries a risk as the weakened live viruses in the vaccine can revert and lead to circulating vaccine-derived poliovirus.

To mitigate this risk, countries were asked to switch from a trivalent version of the oral polio vaccine, which included all three types of poliovirus, to a bivalent version that excluded the type 2 component. This change led to a decrease in immunity to type 2 poliovirus, allowing for new outbreaks of type 2 vaccine-derived poliovirus and ultimately the very large number of vaccine-derived polio cases that have occurred over the last five years.

Another problematic policy was the decision to reduce the



numbers of WHO and other partners’ polio staff, particularly in Nigeria, as part of the plan for polio transition. This sudden loss of experienced staff had a major impact on operations.

Later, another policy decision taken in African countries was not to use the original monovalent oral polio vaccine to deal with outbreaks, but to await supplies of the novel oral polio vaccine. This added strength to the spread of polio throughout many parts of the continent.

The introduction of the inactivated polio vaccine was meant to overcome the challenges with the oral polio vaccine withdrawal. However,

while the inactivated polio vaccine market is stable, with diverse suppliers and multiple bulk producers, its administration is more complex and costly, limiting its reach, especially in low-resource settings. It also does not stop transmission, but it prevents paralysis. The supply of the inactivated polio vaccine has also been constrained, which further hampered its implementation.

THE DAWN OF A NEW ORAL POLIO VACCINE: HOPES AND DISAPPOINTMENTS

The search for a solution to the ongoing challenge of vaccine-derived polio came to a head at the beginning of the present

decade. Getting vaccine strategy right is absolutely the key to controlling the poliovirus, arguably even more so in the case of eliminating the vaccine-derived poliovirus than the wild version.

Since 2016, a monovalent oral polio vaccine type 2 (often referred to as “Sabin vaccine” or “outbreak vaccine”) has been available for use when type 2 vaccine-derived poliovirus is detected, or leads to cases of polio.

Initial planning assumptions after the global “switch” were that such outbreaks would be relatively few, each would be a global public health emergency and the monovalent outbreak vaccine would be authorised on a case-by-case basis by the WHO

Director-General. However, as this vaccine began to be used on a large scale, it became clear that it was converting to a virulent form (at the level of previous attenuated oral polio vaccines type 2) and transmitting infection into areas contiguous to the outbreak zone.

The prospect of breaking this harmful loop of polio causation came in the form of a new oral polio vaccine that was designed so as not to revert from an attenuated poliovirus form to a virulent one, providing the genetic stability that the older vaccines lacked. The “novel” oral polio vaccine was developed by a scientific consortium with funding from the Bill & Melinda Gates Foundation.

The GPEI’s strategic actions were understandably marked by a desire to move forward on a new technology that would provide a solution to a crisis where 30 countries had polio cases in their populations, years or sometimes decades after their last previous case.

The novel oral polio vaccine type 2 was the first ever vaccine introduced under the WHO’s Emergency Use Listing. High expectations were placed on the transformative potential of the new vaccine. A 2020 GPEI strategy document raised hopes (with a caveat regarding supply) that the new vaccine would decisively deal with remaining vaccine-derived polioviruses within only six months of its use.



The document entitled *Strategy for the response to type 2 circulating vaccine-derived poliovirus 2020–2021*, published in February 2020, was described as an “addendum” to the polio endgame strategy 2019–2023. The third part of this three-part strategy, covering a six-month duration (February 2021–July 2021), set forth the optimistic intent of:

“Novel OPV2 completely replaces Sabin OPV2; cVDPV2 outbreaks stopped.”

As it turned out, the new vaccine did not succeed in eradicating vaccine-derived polio within six months, but it did have a major effect on attitudes in polio-affected countries. The prospect of a new tool for addressing outbreaks prompted many countries in the African Region to opt for exclusive use of the new vaccine, even if it meant waiting for supply. Many were reluctant to use the existing outbreak vaccines, a course of action which could potentially seed further infection.

In 2021, Nigeria became one of the first countries to be verified for use of the novel oral polio vaccine type 2. An estimated 350 million doses of it were administered there. However, the pandemic-induced pause in vaccination activities meant that larger-scale vaccination campaigns were required, as the polioviruses had spread. What had previously required small-scale activities, now needed the new oral polio vaccine to cover bigger geographies if the vaccine was to

have a decisive impact on spread. Consequently, Nigeria began to mount national campaigns.

There remains a risk associated with novel oral polio vaccine relying on a sole supplier. Any disruptions in production or natural disasters affecting this single source, as occurred in late 2022 and early 2023, could seriously harm the overall outbreak response. Work is underway to bring a second supplier on board to mitigate this risk.

The logistics of getting vaccine have also been challenging. Transporting millions of doses of vaccine from Indonesia to Nigeria takes multiple flights and time to pack the products. Operationally, managing the global supply has been difficult, with vaccines sometimes going unused when campaign plans are delayed, resulting in wastage. Similarly, doses based on 100% coverage estimates have resulted in leftovers when campaign quality is low.

In the absence of adequate supplies of the novel oral polio vaccine, countries were advised to use the existing outbreak vaccines, but many did not wish to and the spread of the poliovirus continued.

This has all had an impact on the effectiveness and efficiency of action to combat the multiple outbreaks of vaccine-derived polio. At the time of the July 2023 IMB meeting, nearly 700 million doses of the novel oral

polio vaccine type 2 had been administered. The vaccine is on track for pre-qualification by the end of 2023.

While most countries using the novel oral polio vaccine have not reported any genetic instability, as of 31 July 2023, 41 type 2 vaccine-derived poliovirus cases, derived from the use of the novel oral polio vaccine, had been detected. There have also been 22 environmental detections and nine other detections in people. They were in the Democratic Republic of the Congo, Burundi, Zambia, Tanzania, the Central African Republic and Nigeria. The IMB was told by the GPEI that, based on available data, the estimated risk of emergence of vaccine-derived poliovirus with use of the novel oral polio vaccine is 80–90% lower than would be the case if other oral polio vaccines were deployed in outbreak responses.

STRATEGIC POSITIONING: DEALING WITH SHOCKS, SURPRISES AND SHAPE-SHIFTING

The strategic approach taken by the GPEI has been criticised for underestimating the complex dynamics of vaccine-derived poliovirus. Some argue that the strategy has been overly simplistic, attributing such outbreaks largely to low essential immunisation coverage and neglecting to strongly push preventive measures in non-endemic, but vulnerable, countries.

Financial and logistical constraints have further complicated the strategic approach. Outbreak responses account for almost 40% of the entire GPEI budget, forcing a reprioritisation of actions at the expense of preventive vaccination campaigns. This increases the likelihood of further outbreaks.

On a more granular level, the repercussions of this global policy-making play out starkly. Resource constraints are limiting what should really be done to combat polio. For example, the IMB heard that in one country resources for round two of micro-planning were unavailable. The team concerned spoke of the

demoralising effect of planning according to a “ceiling,” whereby some important needs were not making it into the budget simply because of compromises in being able to respond.

The Polio Programme is also struggling to keep pace with the growing birth cohort. There are too many children born in between vaccination rounds who are being missed, resulting in another lapse in prevention.

While there has been a reduction in the vaccine-derived poliovirus burden, case numbers, geographical concentration, and the number of new emergences, it is important to recognise that the

reduction is very recent. The cumulative number of cases of polio due to types 1 and 2 vaccine-derived poliovirus shortly after the IMB meeting (25 July 2023) was 192. By the same period in the previous three years, it was 391(2022), 327 (2021), 495 (2020).

There have been successes, notably in Africa, where the governments of Malawi, Mozambique, Zambia and Tanzania responded swiftly to outbreaks of type 1 wild poliovirus in 2022. The transmission of the virus across a wider geography did not extend substantially beyond the original points of detection, which is a positive sign, especially considering the long intervals since the last recorded cases of wild poliovirus in these countries. These successful outbreak responses document the high operational and technical capacity of these countries, the region, and the GPEI. It is very unfortunate that the same rapid and large scale response has not been used successfully to end transmission of vaccine-derived polio outbreaks.

The Polio Programme’s strategic approach has been to shift towards much bigger outbreak response campaigns than those which have been possible in the past. Vaccine supply disruptions are being smoothed out and increased supplies will be available for the remainder of 2023.





The timeliness of responses is still very problematic. Almost 40% of vaccination response campaigns have met the threshold to date, but 60% have not.

The IMB was told that standard responses, which are two full vaccination rounds plus a mop-up (“two-plus-one”), have been successful in stopping breakthrough transmission in 20 of the 28 countries to date. This is certainly an improved performance but it is a success rate of 70%. When three out of every 10 outbreaks are not being contained, it is a clear sign that the current approach is not yet sufficient.

Nigeria infected 23 other countries with vaccine-derived polio. The Democratic Republic

of the Congo infected between five and seven other countries. Getting quickly to the source of where transmission starts is absolutely critical for the Polio Programme.

The vaccination strategy alone is insufficient to stop transmission in the most consequential geographies, and those suffering from repeated importations, usually from their immediate neighbours. These areas have very high rates of zero-dose children. In such places, the GPEI has emphasised that the solution will come from a more tailored and intensive approach to address the problem of persistently missed children. However, a multisectoral collaboration involving health agencies, the government,

and local stakeholders is also required to address challenges relating to complex humanitarian emergencies, malnutrition, major security threats and persistent barriers to access.

The Polio Programme has had to prioritise its actions very robustly. In order to enable and sustain outbreak responses, it has diverted resources away from preventive vaccination campaigns. This is because large sums of money have been needed to enable and sustain outbreak responses.

Given that 80% to 90% of vaccine-derived polio cases are concentrated in a small number of geographies, it is essential to extinguish those engines of transmission.



THE FUTURE: STOPPING ALL ORAL POLIO VACCINES

The Strategic Group of Experts on Immunization (SAGE) has recommended that all oral polio vaccine use should cease approximately 10 years after the interruption of transmission. The best way to manage risks associated with this is to effectively close all outbreaks, ensure high coverage of the inactivated polio vaccine in essential immunisation programmes, and implement strict containment measures. However, the ability to successfully achieve these objectives on a global scale is extremely unlikely, given the

current quality of countries' performances.

To completely eradicate polio, the use of all oral polio vaccine must be stopped after wild poliovirus transmission is interrupted. So far, the approach has been phased, and with many vaccine types already available and potential new products in the pipeline, balancing supply and demand will prove to be a big challenge. Shifting strategies to eradicate polio, missed deadlines, anticipated discontinuation of certain vaccines, and the possible introduction of future vaccines further add to uncertainties.



There is a vaccine-derived poliovirus working group that was constituted to address the timelines and tools for new vaccine implementation, antiviral treatments, the prospects of supply and demand, and insights into the epidemiology of vaccine-derived outbreaks. It is crucial for it to develop a comprehensive and realistic strategy that considers the current limitations and challenges.

Monovalent, bivalent and trivalent oral polio vaccines:

The use of monovalent, bivalent and trivalent oral polio vaccines were successful tools in the early stages of the polio eradication programme, but their use now poses risks. Continued use of these vaccines can lead to cases of vaccine-derived polioviruses and vaccine-associated paralytic polio. Large stockpiles of monovalent vaccine and trivalent vaccine exist, but demand for them has become minimal or non-existent. It is crucial to manage the risks associated with bivalent oral polio vaccine availability, such as reliance on a declining supplier base and possible further market exits.

Novel oral polio vaccines: The late-stage development of novel oral polio vaccine type 1 (nOPV1) and novel oral polio vaccine type 3 (nOPV3) has the potential to fulfil the requirements to halt the transmission of type 1 and type 3 vaccine-derived polioviruses, particularly type 1 (which is a growing cause for concern). Phase one studies for both vaccines have been completed and phase



two of the work is underway and expected to be completed around 2025. However, the true effectiveness of these vaccines in the field remains unknown until they are produced and tested on a larger scale.

In future, there may be a trivalent novel oral polio vaccine to combat all three types of poliovirus simultaneously. The case of use for this would be in the post-eradication phase, if outbreaks with co-circulation of two or three types of poliovirus were to emerge. If the programme ends up needing to use the novel oral polio vaccine more frequently than expected in regular vaccination campaigns due to ongoing circulation of vaccine-

derived polio, the need for a three-strain version of the novel oral polio vaccine would grow. However, the current favoured strategy is to eliminate one form of poliovirus at a time and use single-strain versions of the novel oral polio vaccine as necessary.

Vaccines using virus-like particles: Virus-Like Particles are molecules that closely resemble viruses but lack the viral genetic material, making them unable to cause disease. They have been investigated as potential vaccine candidates for various infectious diseases, including polio. These vaccines mimic the natural virus's structure without the associated risks of infection. The use of

virus-like particles is being explored as a possible strategy for polio vaccination in the future.

Hexavalent vaccine: The recent pre-qualification of a hexavalent vaccine, which combines six vaccines into one, including inactivated polio vaccine, offers the potential to simplify immunisation programmes. However, its adoption will come with challenges. There is concern about the vaccine's availability and manufacturers' production capacity, especially the wholesale pertussis component. This could hinder the advancement of a second dose of inactivated polio vaccine, with the risk that some countries will wait for the hexavalent vaccine to come.

The transition from a single-dose to a hexavalent vaccine

will be operationally complex, potentially requiring countries to administer separate doses. While Gavi's approval for funding the hexavalent vaccine alleviates some financial concerns, there still exists a potential "chicken and egg" dilemma: manufacturers may be reluctant to produce large quantities of the vaccine without an assured market, but the market might not fully materialise without guaranteed financing. Thus, despite Gavi's support, a multifaceted approach is still needed to encourage "stalled" countries to adopt the second dose of the inactivated polio vaccine, increase hexavalent vaccine availability, and secure additional financing to assure manufacturers of a viable market.

Treatments for chronic excretors: Advancements in antivirals and long-acting

monoclonal antibodies for the treatment of chronic excretion of the poliovirus seem promising, but there is scepticism regarding their effectiveness, particularly in identifying the actual number of people affected.

THE SITUATION IN FOUR CONSEQUENTIAL GEOGRAPHIES

In each of the four consequential geographies, a range of deep-seated contributory factors are fuelling transmission, including inaccessibility, insecurity, political instability and logistical complexity. They compound the difficulties in delivering vaccines and achieving adequate coverage to prevent both types of vaccine-derived polio.



NIGERIA

Nigeria has achieved a remarkable 95% reduction in vaccine-derived polio cases from a peak of cases in 2021. The ZAS-1 poliovirus lineage has spread through 28 states in Nigeria since 2021 and been exported to other countries in Africa. Genetic diversity of the polioviruses has been reduced by 86%, from seven different lineages in 2019 to just one in 2023.

At the time of the July 2023 IMB meeting, no new circulating type 2 vaccine-derived poliovirus lineages had been detected in Nigeria for over four years. The last persistent transmission axis is located in the three north-western states of Zamfara, Sokoto and Kebbi that are characterised by insecurity, vulnerable populations and a complex operating environment. These neighbour Niger state, which is also considered very high-risk due to high numbers of inaccessible children residing there.

The Nigeria Polio Programme believes that it has evolved in the last two years, splitting the type 2 vaccine-derived poliovirus challenge into two parts. In “larger Nigeria”, the focus is on building population immunity through preventive campaigns. In the “smaller Nigeria” of 22 local government areas in the northwest, the programme is deploying what it calls “innovative and radically different approaches”.

In these 22 local government areas, insecurity is the main barrier, which has given rise to other factors. Health workers’ lack of security affects campaign quality, while insecure communities prioritise food and other needs over oral polio vaccines. An estimated 4.9 million children across 48,000 settlements face various forms of inaccessibility.

The Nigeria Polio Programme is finding ways to overcome the barrier of insecurity and, though controversial, is engaging with those who are denying access.

Additional measures have been put in place, including: recruiting permanent health workers who reside in the insecure areas to

do in-between-round activities; systematically engaging with “gatekeepers” and traditional religious leaders, to allow access; and expanding the scope of directly observed polio vaccinations.

In the key states in the north-west, the approach required involves meticulous programmatic sweeps, not just local government district-by-district, but settlement-by-settlement, to ensure every single child is reached.

The IMB was told that Nigeria is on the brink of financial crisis. This means that very few state governors will put their money into the Polio Programme because the priority is to feed





their people. The Polio Programme sees the next six months as a critical period for its work and is very concerned about getting the resources (e.g. extra staff, technology) that it needs.

One member of the Nigeria polio team told the IMB:

“It feels like we’re driving with the handbrake on.”

Another attendee at the July 2023 IMB meeting with deep knowledge of Nigeria said:

“There has to be a rethink of how to ensure that the government can continue to fund. That means not letting national or state governments off the hook. In particular, the governors: we need them to be more involved. The IMB can remember times past when the Presidential Taskforce on polio eradication was pivotal. This was the heyday of the formidable effort to extinguish wild poliovirus in Nigeria. Every governor was asked to describe their stewardship of the programme. Personal, visible accountability was strong. The IMB said that this process ‘wobbled and all the dominoes fell’. It is political accountability, engagement and an alignment mechanism that urgently needs to come back.”

Has the Polio Programme in Nigeria reduced the numbers of type 2 vaccine-derived poliovirus cases or are the good results because of a failure of surveillance? Even in those places where access is a problem, the programme has deployed community informants to report cases from inaccessible areas. Acute flaccid paralysis cases are isolated using these informants. This makes it less likely that cases are being missed due to inaccessibility and insecurity. However, there are places that are potential reservoirs of infection in the north-central area, especially around Kaduna and Niger states.

In other parts of Nigeria, population immunity may be low enough to spark outbreaks.

Susceptible populations have accumulated that are naive to type 2 poliovirus. Essential immunisation coverage is poor. A hundred zero-dose local government areas have been identified for action in Nigeria.

There are risks for Nigeria of both type 1 and type 3 vaccine-derived poliovirus outbreaks. Particularly, an outbreak of the type 1 virus in Nigeria could prolong interruption of the transmission of the vaccine-derived poliovirus by an extended period. It will be vital to build population immunity against it.

The Nigeria Polio Programme has delivered a large number of rounds with novel oral polio vaccine type 2 but run hardly any bivalent oral polio vaccination

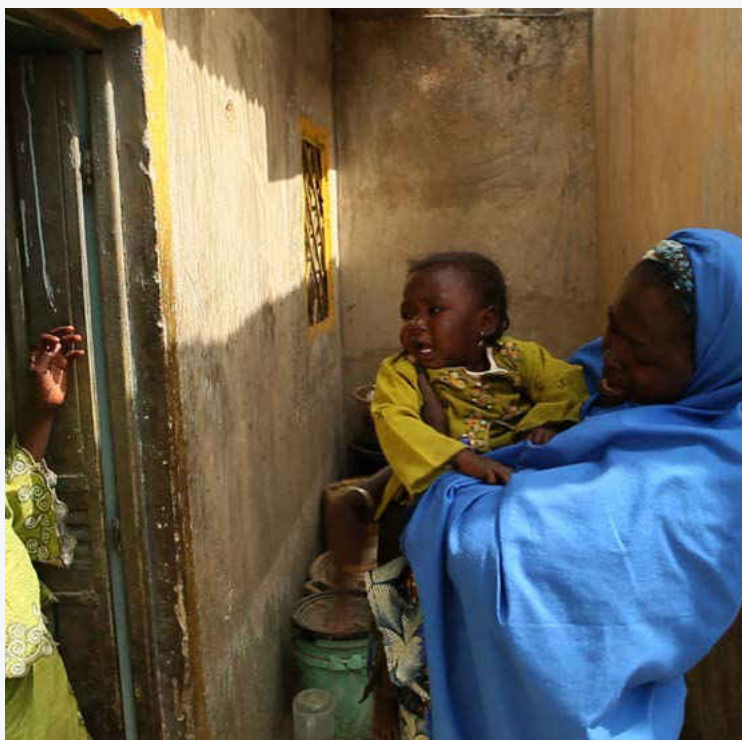
campaigns in the last year. Many years have passed, without any bivalent oral polio vaccines in essential immunisation programmes, in an area where there is a high birth cohort. This could lead to strong emergence of type 1 vaccine-derived poliovirus. Focus must also be kept on finishing interruption of transmission of type 2 vaccine-derived poliovirus.

The most pressing immediate task for the Nigeria Polio Programme is to reach the inaccessible children in the north-west of the country. Special intensified campaigns have been mounted to boost essential immunisation in the four high-risk states.

The evidence across the world shows, mostly, that a few rounds with novel oral polio vaccine are able to stop type 2 vaccine-derived poliovirus outbreaks. Why is it different in Nigeria? It is because there is such a low coverage of essential immunisation. There are about 2.3 million zero-dose children in Nigeria, spaced around the country, but clustered largely in the north, which represents about half the zero-dose children in the entire African Region. Progress is being made. Almost 400,000 zero-dose children have been reached in the high-risk states.

Over 360 million doses of novel oral polio vaccine type 2, more than half the global supply delivered to date, has been administered in Nigeria. Wrapping up this outbreak is overdue, but the risk remains high until essential immunisation coverage is substantially raised. The realisation of this and the programmatic realignment required is to the fore in plans and actions.

The Nigeria Government's vision of what is required to deliver primary health care to the average Nigerian was articulated by the country's health team who attended the July 2023 IMB meeting. They have produced a document that has been signed off by all of their partners and donors. Implementation would deliver universal health coverage and the relevant sustainable development goal in Nigeria.



DEMOCRATIC REPUBLIC OF THE CONGO

Historically, the Democratic Republic of the Congo has experienced major operational challenges and slow responses to outbreaks. This stems from an overly reactive approach to risks and outbreaks. Some eastern provinces remained polio-free for years, only to have outbreaks that went long unaddressed, allowing them to spiral out of control.

In 2022, the Democratic Republic of the Congo reported an extraordinary 513 type 1 and type 2 polio cases, accounting for more than half of all cases in Africa that year.

The Democratic Republic of the Congo's polio outbreaks have persisted since 2017. The number of cases has decreased in 2023, due to more and better vaccination campaigns. However, with numerous borders and high population movement, along with geographical complexities, political unrest, insecurity, and physical barriers, access to certain populations is difficult. The upcoming elections add further complexities to the fight against polio.

Polio cases are concentrated in the eastern provinces of Maniema, Tanganyika and Haut-Lomami, designated by the Polio Programme as one of the most consequential geographies for polio eradication. These



provinces have a high proportion of unvaccinated children and are affected by humanitarian crises and inaccessibility.

Polio vaccination in the Democratic Republic of the Congo has been largely subnational, with the exception of one campaign in June 2023. This approach creates vulnerabilities between targeted and non-targeted areas, increasing the likelihood of the spread of infection.

The Democratic Republic of the Congo has over 500 health zones, but the Polio Programme does not have enough consultants to support each zone. There is heavy reliance on government field teams, but they do not always

have the training and capacity needed. This has cast doubt on the quality of surveillance in the rest of the country.

The Polio Programme has struggled with vaccine supply for large-scale responses, partly due to policy decisions at regional level. There have also been complications in the use of the necessary novel and bivalent oral polio vaccines, to combat types 1 and 2 vaccine-derived poliovirus. Spacing the vaccines to avoid interference with the immune response has caused difficulties in prioritising responses.

Response to polio case detection has been inconsistent, with campaigns delayed for months due to vaccine unavailability and human resource constraints.

Despite there being type 1 vaccine-derived poliovirus cases in 2022, no effective response was mounted that year. A participant at the July 2023 IMB meeting noted:

“When you look at the campaigns conducted, the responses and scopes chosen for the response are not always the same. Sometimes we’re good at chasing the virus, and at other moments we’re not conducting campaigns even five months after cases are flagged in specific zones. For example, there were zero campaigns during 2022 for the type 1 virus, even though the most consequential geographies were flagging cases. There were no campaigns to try to control the situation.”

The Polio Programme has struggled with poor micro-planning, as the country has not conducted a census. As a result, resource allocation, access to vulnerable populations and coordination are difficult.

Vaccination campaigns have been sub-optimal. Lot Quality Assurance Sampling measurements show that 27% of health zones fall below quality standards, while 23% require improvement. The Democratic Republic of the Congo’s essential immunisation system is inconsistent and weak in some areas. At the Third National Forum on Immunization and Polio Eradication, the President pledged financial backing and nationwide support for vaccines. He committed to halting poliovirus

transmission within the year, and secured support from all governors for a nationwide essential immunisation plan. However, reported coverage is often inaccurate, as shown by Haut-Lomami province’s overestimation.

Another IMB meeting participant explained:

“There’s a fundamental issue with immunisation in these hard-to-reach areas, and it’s going to result in the Democratic Republic of the Congo being stuck in a position of vulnerability. This vulnerability leads to recurrent outbreaks, and there is a continued need to respond until these underlying issues can be addressed.”



Resources for immunisation exist but are underutilised. These represent an opportunity to strengthen the systems through a “back-to-basics” approach involving defining populations, identifying where systems fail, and determining how to extend them to build immunity.

Polio eradication has also been hampered by inadequate surveillance. Delays to specimen transport and laboratory reporting can extend up to two months, allowing outbreaks to escalate. A pilot of the data driven national surveillance system aims to reduce such delays. The national laboratory is now able to

conduct direct detection, which could greatly facilitate faster and more effective outbreak responses. Environmental surveillance is ongoing, with mixed results.

Community acceptance of the oral polio vaccine is a critical concern, and trained personnel are needed to ensure effective communication strategies.

The Democratic Republic of the Congo’s Polio Programme has produced a new plan focusing on regular vaccination, intensive disease surveillance and broader supplementary immunisation activities. Measures include a

National Public Health Institute and provincial Emergency Operations Centres. However, the obstacles are enormous and may not be overcome by these efforts alone.

Data integration and multi-antigen strategies are used in vaccination campaigns, but polio funding has not been used to strengthen essential immunisation.

There are ongoing efforts to improve micro-planning and training and to combat anti-vaccine misinformation. The National Emergency Operations Centre has been strengthened, and plans are being made to coordinate cross-border strategies.

Despite this work, polio eradication in the Democratic Republic of the Congo is hindered by high case counts, delayed campaigns, insecurity, logistic hurdles and a delayed surveillance system. The challenges are deep-rooted and multifaceted, requiring improvements in socio-political conditions, governance and infrastructure.

Despite the obstacles, after discussion with the country’s public health team, the IMB felt that an effective programme was coming together. However, with dual transmission challenges and potential political unrest, it is very hard to imagine stopping vaccine-derived poliovirus transmission in the Democratic Republic of the Congo in the first part of 2024.



YEMEN

Yemen's political situation, especially in the north, is a mosaic of conflicting interests, historical grievances, complex conflicts, and deep divisions that have contributed to a prolonged and devastating civil war. Effective action to resolve the conflict will require a nuanced understanding of these factors, patience, and a commitment to inclusive dialogue and reconciliation. The situation is multifaceted and can be traced back to various historical, tribal and religious factors.

In the north, the Houthi movement, officially known as Ansar Allah, has been a significant force. Originating from the Zaidi Shia community, the Houthis have expressed grievances related to economic and political marginalisation. Since 2014, they have controlled significant portions of northern Yemen, including the capital, Sanaa.

The Yemeni Government, backed by a Saudi-led coalition, has been engaged in an intense conflict with the Houthis.

The divisions in Yemen are not solely along religious or regional lines. Former President Ali Abdullah Saleh, who was killed in 2017, had formed a surprising alliance with the Houthis before a falling out led to his death. His General People's Congress party continues to be a key player, reflecting the shifting and complex allegiances that

characterise Yemen's political landscape.

In the north and other parts of Yemen, local tribal dynamics also play a crucial role. Relationships between tribes and various political actors are fluid, and alliances can shift according to local interests and grievances.

Adding to the complexity is the presence of extremist groups, such as Al-Qaeda in the Arabian Peninsula (AQAP). These groups have exploited the chaos to gain footholds in certain areas, further complicating efforts to bring stability to the country.

The ongoing conflict has led to a humanitarian catastrophe, with widespread famine, disease and displacement affecting millions of

Yemenis. Attempts to negotiate peace have been hampered by the multiplicity of interests and deep-seated mistrust between the parties.

International action to mediate the conflict has met with limited success, and the United Nations has called for an inclusive political solution that addresses the underlying issues. However, the road to peace appears long and fraught with obstacles, given the intricate web of local, regional, and international factors that shape Yemen's political context.

The complex situation in Yemen concerning vaccine-derived poliovirus is deeply tied to political unwillingness, geographical divisions, logistic hurdles and the spread of



anti-vaccine sentiments. The government's reluctance to conduct polio vaccination campaigns has been a significant obstacle, and the lack of local laboratories has necessitated sending samples to various neighbouring countries for analysis.

Despite the same level of surveillance as in previous years, the detection rate for the virus has dropped dramatically. In 2022, more than 160 cases of type 2 polio were detected, while no new cases have been identified so far in 2023 (data as of 25 July 2023).

One success story in the south illustrates the potential. After two rounds of vaccination

campaigns, transmission appears to have stopped in the southern part of Yemen, leading to no new detections. However, the definition of "stopping transmission" is a complex and often temporary state, as evidenced by subsequent outbreaks or importations.

In north Yemen, the situation is more challenging. The absence of cases in 2023 does not necessarily signify a complete cessation of poliovirus transmission. The situation in the north has remained static, with difficulties in obtaining authorisations for immunisation campaigns.

The strong anti-vaccine stance from the Houthis has further exacerbated the situation, not

only regarding polio but also other diseases such as measles. Adding to the complexity, it is unclear whether the outbreak of vaccine-derived polio in Northern Yemen has burnt itself out or whether population immunity has built up.

Interrupting poliovirus transmission in Yemen is an uphill task. It demands a nuanced understanding of the political landscape, a willingness to engage with all parties involved, a robust and adaptable surveillance system, and a coordinated international effort. Without addressing these multifaceted issues, there is little hope of a breakthrough.





SOMALIA

At the core of the Somalia's governance is a federal structure, consisting of a Federal Government of Somalia and several federal member states. The relationship between the central government and the regional states is often tense and fraught with disagreements over resource distribution, power-sharing, and governance methods.

One of the most prominent security challenges facing Somalia is the presence of Al-Shabaab, an Islamist extremist group linked to al-Qaeda. Despite concerted efforts by the

Somalia Government and international forces, Al-Shabaab continues to control parts of the country, carrying out frequent attacks. The group's ability to launch complex and lethal operations has significantly hampered stabilisation efforts.

Election processes in Somalia have been laden with delays, disputes and allegations of corruption. The 2021 parliamentary and presidential elections saw multiple postponements, resulting in heightened political tensions and uncertainties. A shift from clan-based voting to a "one person, one vote" system has proved very difficult, leading





to indirect elections, with clan elders and other power-brokers playing significant roles.

Several international actors have a stake in Somalia, including the African Union Mission in Somalia (AMISOM), the United Nations, and countries such as the United States and Turkey. The dynamics between these international players add layers of complexity, sometimes fostering coordination and, at other times, competition.

Widespread poverty, food insecurity, and displacement also characterise the humanitarian situation in Somalia. These issues are often exacerbated by natural disasters, such as droughts

and floods, compounding the challenges faced by the government and humanitarian organisations.

The political landscape in Somalia is further fragmented by localised conflicts, clan rivalries, and the diverse political dynamics of its regional states. Efforts to build a capable and accountable security sector have been slow and fraught with challenges, impacting not only the fight against Al-Shabaab but also the broader effort to stabilise the nation.

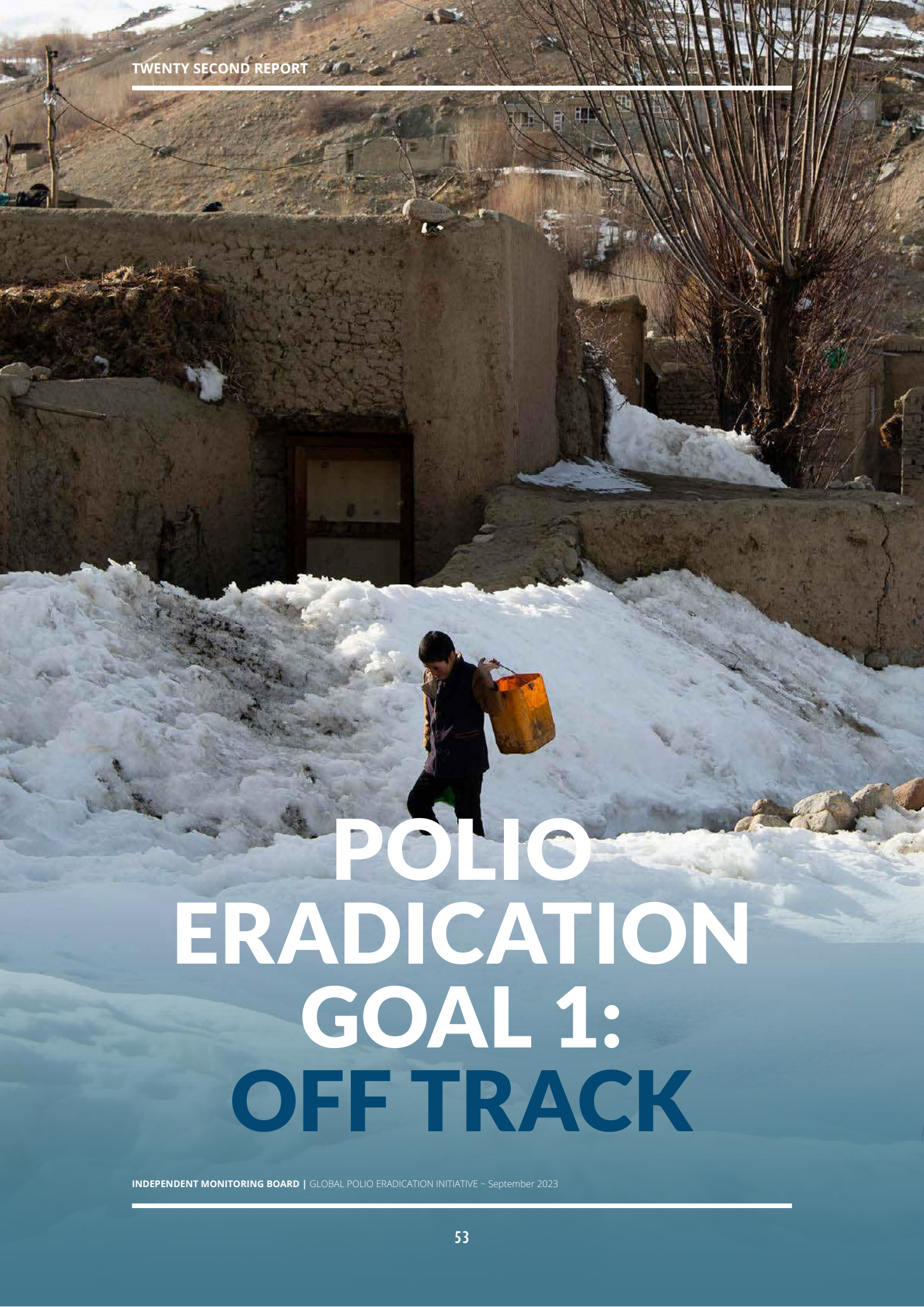
Interrupting the transmission of vaccine-derived poliovirus in Somalia presents a daunting task in this political and social landscape. Al-Shabaab's control over parts of the country

has made access to certain areas for polio vaccination campaigns particularly difficult. Its hostility towards Western-backed initiatives has led to suspicion and resistance against vaccination, posing serious risks to health workers.

The inaccessibility has been a long-standing issue, though there has been a substantial reduction in inaccessible children from 600,000 to just over 90,000 by early 2023. Despite these improvements, reaching all persistently missed children is a serious obstacle to stopping transmission.

The country's complex tribal dynamics and the presence of various armed groups create logistic challenges in maintaining control over certain areas. There is widespread poverty, lack of education, and limited opportunities. These challenges often lead to mistrust towards vaccination campaigns and make accessing communities in need even more challenging. These difficulties are not just limited to areas controlled by armed factions; they pervade many parts of the nation.

The country's underdeveloped health infrastructure also hampers the quality of the polio outbreak response. A lack of integrated services to address the multiple deprivations faced by many parts of Somalia makes tackling polio extraordinarily difficult.



POLIO ERADICATION GOAL 1: OFF TRACK

POLIO ERADICATION GOAL 1: OFF TRACK

Across the two endemic countries, the geographical scope of wild poliovirus transmission, the number of polio cases, the number of environmental detections and the genetic diversity of the polioviruses have all reduced. Most of the traditional and intractable wild poliovirus reservoirs have for the first time been cleared. In the past, these areas have been the drivers of ongoing transmission. In addition, the Polio Programme has demonstrated its capability to prevent re-establishment of wild poliovirus transmission in these reservoirs.

This is an extremely encouraging trend. There is no evidence of falsification or concealment of data in critical areas of performance, except in south Khyber Pakhtunkhwa where there are doubts about data validity.

The first strategic goal is to interrupt wild poliovirus transmission globally by the end of 2023. At the time of writing this IMB report, that deadline is 18 weeks away and endemic wild poliovirus transmission is still occurring in south Khyber

Pakhtunkhwa and eastern Afghanistan.

The IMB judges progress toward the first strategic goal as **off track** with a very high probability that it **will be missed**.

This is because the complexity of the continuing barriers to interrupting wild poliovirus transmission is too great to be resolved in an 18-week period.

The most important sign of nearing completion would be



the absence of poliovirus detection, but detections are still being observed at the time of writing this report.

Until they cease entirely, and all reservoirs are cleared, the poliovirus could continue to manifest in unexpected ways.

RISKS (R)

The risk statements that follow should each be read with the prefix “The risk of...” (e.g. The risk of loss of continuity of political commitment and alignment and security support in Pakistan).

R 1.1: Loss of continuity of political commitment and alignment and security support in Pakistan

The process of changing governments in Pakistan has previously had a negative impact on the Polio Programme. Federal elections are scheduled to take place later in 2023. The IMB was told that continuity of political commitment at federal and provincial level is assured.

Transition arrangements in the provinces are led by the Chief Secretaries, with whom the IMB spoke at its meeting in July 2023. At that discussion, the IMB gained a strong impression of Chief Secretaries who



were being very “hands-on” with polio. They had detailed content knowledge of the polio situation in their jurisdictions, as well as a willingness to make sure that the programme remains a priority. They have ensured that polio is on everybody’s radar, with a very clear understanding of where the Polio Programme is, and where it needs to get to. This depth of engagement of the administration’s senior leadership has not been present so consistently in the past and it is vital that it continues.

Elections in Pakistan come with the mobilisation of the district commissioners, the police force and the army, for election duty. This can affect the polio calendar and all the necessary programmatic activities such as the timing of planned vaccination campaigns, training and surveillance.

The country’s Polio Programme will come under pressure because it can no longer have the usual level of support from the army and the police with election activities happening. The Polio Programme in Pakistan must focus on maintaining strong engagement at both the national and provincial level, but also particularly at district level, to try to insulate vital polio activities from these organisational changes when the political leadership will be otherwise engaged.

Losing all or some of the current – and impressive – engagement of the provincial Chief Secretaries would be an enormous setback



to the prospects of early interruption of wild poliovirus transmission. The current incumbents will at some point be transferred to other posts as part of normal civil service procedures. It will be important for the GPEI to make contact with each new appointee to explain the importance of the polio eradication programme and get them involved to achieve the same level of engagement.

R 1.2: Weakening of newly established resilience in former polio reservoirs in Pakistan

In the last year, the Pakistan Polio Programme has built some strong resilience features. When wild poliovirus broke out of south Khyber Pakhtunkhwa

in 2022 and made its way to other parts of the country, the Polio Programme succeeded in preventing transmission from taking hold.

Many long-standing polio eradication observers were very surprised by this newfound resilience capability, particularly the programme’s strong performance in Karachi. Having been a very vulnerable part of the country in 2018, and earlier, a poliovirus detection in Karachi can now seemingly be extinguished and not amplify and spread.

A key reason for this is the in-depth engagement with communities, a long-standing

theme of previous IMB reports. The identification of those communities by tribe, sub-tribe and language ensures that community workers and influencers are matched closely to families' cultural background and beliefs.

Any true re-establishment of wild poliovirus in these former reservoirs would be disastrous to polio eradication in Pakistan and for the world. Robust, rapid and geographically well-scaled outbreak responses are essential. So too are strong well-coordinated continuous activities to build immunity.

R 1.3: Re-establishment of transmission in Quetta Block

Quetta is a special case among the former reservoirs. The others, notably Karachi, have been confronted by the return of poliovirus and have withstood the challenge. Quetta Block has not yet been tested in this way.

The Polio Programme's performance in Quetta has not shown substantial improvement. Despite the presence of geospatial satellite imagery to track populations of children, there are still parts of Baluchistan where external monitors have not been. In particular, the areas bordering with Iran have received hardly any monitoring visits. There are areas of Baluchistan where very few campaign rounds

have been carried out. This all highlights gaps in oversight. Essential immunisation in these areas remains poor; improved immunity levels is the primary line of defence against poliovirus transmission.

In the informal discussions over coffee and lunch at the July 2023 IMB meeting, many people expressed a lack of confidence in this province's level of resilience if poliovirus returned.

The Polio Programme has been heavily focusing on south Khyber Pakhtunkhwa but it also needs to turn its gaze intensively to Quetta. It is a weaker part of the Pakistan Polio Programme – weak in the sense of the government's engagement, weak in partnerships and capacities.



R 1.4: Solely incremental, instead of transformative, improvements in access and programme performance in south Khyber Pakhtunkhwa

Despite commendable efforts and substantial investments, Pakistan continues to see a concerning prevalence of polio detections. Endemic transmission persists in the south districts of Khyber Pakhtunkhwa, where the virus has a stubborn hold.

In its discussions with the IMB, the GPEI leadership was bullish that detections in Khyber Pakhtunkhwa are restricted to a small number of areas in the south of the province. However, there have been two polio cases in 2023, the last reported in the *Polio Bulletin* on 9 August 2023.

The operating environment in south Khyber Pakhtunkhwa is complex and threatening. A remarkable 200 plus boycotts of the polio vaccination programme, with diverse sources of grievance and demands, were running at the beginning of 2023. Serious insecurity problems have also persistently led to delayed, attenuated or cancelled vaccination campaigns. As recently as 31 July 2023, members of the United Nations Security Council strongly condemned a suicide terrorist attack that had occurred the day before at a political meeting in Bajaur, in the Khyber Pakhtunkhwa province. It resulted in the deaths of at least 44 Pakistanis with over 100 injured.



There are still many uncertainties in assessing the Khyber Pakhtunkhwa Polio Programme’s status and difficulties in establishing why, for example, campaign quality is low for a particular vaccination round. The Polio Programme team could not give the IMB an absolute assurance that fake finger marking had been eliminated because they said that they found it very difficult to detect “collusion”.

At the July 2023 IMB meeting, a member of the Pakistan delegation commented:

“As far as our indigenous virus is concerned, we feel that we have the things in place. But still in the Mehsud belt, I have huge concerns. Whatever the strategy is we are doing at the moment, they are vaccinating children piecemeal. We have not gone house-to-house. We have not knocked at every door and checked how many children do you have and how many children are vaccinated and how many are unvaccinated for the last one year? So everything is being judged on assumptions.”

On immediate prospects for Khyber Pakhtunkhwa, a senior member of the Pakistan delegation to the July 2023 IMB meeting concluded:

“Optimism is there but the challenge is humongous.”

The IMB did not feel that a clear and certain path to interruption of wild poliovirus transmission in south Khyber Pakhtunkhwa had been set out. Many of the actions are ad hoc and opportunistic. Different approaches are being tried, some successfully, some not. At the time of the July 2023 IMB meeting, an integrated delivery-led initiative was due to be rolled out.

R 1.5: The lack of a critical mass of integrated methods of Polio Programme delivery

In previous GPEI strategic documents, integration was seen as part of polio transition in the endgame plans. The *Polio Eradication Strategy 2022–2026* makes a commitment to “expedite progress through expanded integration efforts and unified partnerships” as one of the actions necessary to hit the goals of the strategy.

There has always been an inherent tension between the vertically-designed polio eradication initiative and a philosophy of achieving polio outcomes through an essential immunisation and broader health system-strengthening, country-driven, approach.

In the relentless pursuit of polio eradication, the global health community has come to recognise the critical importance of integration and developing synergies with other health programmes.

One of the key challenges that the polio eradication programme faces is striking a delicate balance between the priorities of different health programmes. The tension between global polio eradication goals and the needs of essential immunisation programmes at the national and local levels has been a persistent hurdle. In Afghanistan and Pakistan, the intense focus on polio eradication has diverted attention and resources away from essential immunisation programmes. This not only hindered vaccine coverage but also weakened the overall health system’s capacity to respond to other diseases and health emergencies.

There is no doubt that greater integration is one of the mission-critical corrective actions necessary to interrupt the transmission of any remaining wild poliovirus, to ensure that the gain is maintained, as well as being at the centre of the strategy to stop vaccine-derived poliovirus transmission and to strengthen countries’ resilience to polio outbreaks.

It will be necessary to establish strong coordination with in-country essential immunisation partners to identify zero-dose and

under-immunised communities in polio priority geographies.

Although it is firmly in the *Polio Eradication Strategy 2022–2026*, it is not at all clear that the integration narrative has been well-communicated from the global level to regional and country levels. The concept of integration still means different things to different people, and is interpreted and implemented in different ways.

Integration work in Pakistan has been a slow burn; it is gradually evolving to address multiple health challenges and provide a comprehensive approach to health care. For example, in south Khyber Pakhtunkhwa, UNICEF has invested approximately \$6 million to address critical issues through mobile health clinics, with maternal health; nutrition; and water, sanitation and hygiene components.

Similarly, in Karachi, efforts are being made to ensure sustained immunity levels in children, post-eradication. The Polio Programme is integrating essential immunisation with polio campaigns to reach as many children as possible.

Nutrition remains a significant concern, particularly in Sindh, where a high percentage of children suffer from malnutrition and stunting. While programmes are being implemented, with the help of donors to provide nutritional supplements to nursing and pregnant mothers,



the challenge lies in scaling up these interventions to effectively address the problem.

Despite these positive efforts, critical challenges remain in ensuring effective integration across the two endemic countries, but also the many countries with vaccine-derived poliovirus transmission or those that are vulnerable to outbreaks.

Not establishing a critical mass of integrated delivery at this stage of polio eradication is both a lost opportunity and a serious risk.

This subject is further analysed and discussed, along with the deficits, risks, and uncertainties involved in the recently published 6th TIMB report: *Ambiguities and certainties: Meeting the diverse expectations of polio transition*.

R 1.6: The continuation of poor sanitary conditions in polio-endemic areas and those places vulnerable to re-established transmission

Wild poliovirus circulation and transmission is enabled and enhanced, and polio vaccination efficacy is reduced by insanitary environments and dirty water. Failure to adopt a way to transform, rapidly, the sanitary infrastructure in the key polio-affected and polio-vulnerable communities of Pakistan and Afghanistan have undoubtedly seriously delayed polio eradication. A low-cost package was designed three years ago but there was weak follow-up by the programme.

The IMB has taken a strong stand in recommending action and criticising slow progress on this root cause of poliovirus transmission.

Water and sanitation systems are often included as part of the “bundle” of integration activities that people discuss. It is more appropriate to see them as core infrastructure essential to polio eradication or even as having a programmatic primacy in accord with the Hippocratic dictum: “First do no harm.”

Access to safe water, sanitation and hygiene is essential for human health and well-being.

In 2022, globally more than 2.2 billion people still did not

have access to safe drinking water, 3.5 billion people lacked proper sanitation, and 2.3 billion people did not have basic hygiene services, including hand-washing facilities. United Nations Sustainable Development Goal Six aims to ensure the availability and sustainable management of water and sanitation for everyone by 2030, but current progress is inadequate, requiring more focus on

equity considerations and addressing barriers faced by marginalised communities.

The future of this sector lies in collaborative efforts, combining different disciplines to find solutions for the unique challenges faced by various contexts and communities.

This broader purpose strongly applies to the Polio Programme but in a more focused and immediate way.

R 1.7: The cohesiveness of the Eastern Mediterranean Regional Subcommittee on Polio Eradication and Outbreaks weakening after the retirement of the current WHO Regional Director

The Regional Subcommittee for Polio Eradication and Outbreaks for WHO’s Eastern Mediterranean Region has been chaired by WHO’s Regional Director, Dr Ahmed Al-Mandhari (often jointly with one of the Member States’s health ministers) since it was established in late 2020. The Subcommittee has played a vital role in ensuring collective ownership of the priority for action on the polio-endemic status of Pakistan and Afghanistan, as well as the outbreak countries in the region. Dr Al-Mandhari’s leadership will be greatly missed and it is essential that the new Regional Director, when elected, takes the helm of this committee immediately.

R 1.8: Disruptions posed by community boycotts in Pakistan

Boycotts and refusals, fuelled by misinformation and disaffection with governmental services, are a significant roadblock to the progress of polio eradication in Pakistan; most are occurring in Khyber Pakhtunkhwa province. Stemming from a mix of factors such as the need for basic services, historical grievances, distrust of the authorities and marginalisation, these actions have far-reaching effects that hinder vaccination campaigns.



When vaccination campaigns are viewed as tools of political manipulation, building consensus becomes difficult.

Boycotts against polio vaccination campaigns encompass more than mere acts of resistance; they symbolise a confluence of deep-rooted distrust, misinformation and socio-political turmoil. They embody a broader struggle that extends beyond mere resistance to vaccines.

The Chief Secretary of the province is the key figure in the complex task of resolving boycotts but the Polio Programme also has an essential role in addressing the underlying factors so as to prevent more of them happening.

R 1.9: Re-establishment of wild poliovirus circulation in Kandahar

Afghanistan did not detect any virus outside the east region during 2022 until May 2023 when an environmental detection was made in Kandahar City of a wild poliovirus strain that was related to one circulating in the east region.

Should the poliovirus become re-established in Kandahar City in the south region of Afghanistan, it will prolong the process of interrupting wild poliovirus transmission in the country unless it is immediately closed down with a highly effective outbreak response.

An explosive outbreak with major spread is a plausible

scenario from a poliovirus in this location.

In the south region, each non-house-to-house polio vaccination round misses nearly 500,000 children. Those children are accumulating from round to round. This creates a risk that if the poliovirus detected in the environment begins to circulate, it could trigger a large outbreak that would paralyse hundreds of children in Afghanistan and would then move along the southern corridor into Quetta and onwards to Karachi. That is the traditional route of spread.

A big focus is needed to achieve house-to-house campaigning, involve more female health workers and strengthen the provincial



Emergency Operating Centre. Engaging with the governor of the province may produce a breakthrough.

R 1.10: Loss of momentum to close the immunity gap in east Afghanistan

In Afghanistan, the Polio Programme was badly damaged by two years of disruption of vaccination in the east region. This is now being regained, but improvements in quality and penetration into these communities are only relatively recent. Historically, the polio epidemiological experience of this area teaches that it will take longer to interrupt transmission.

While the Polio Programme is reaching more children than in many years, this positive trajectory is vulnerable to sudden changes. The June 2023 decision to suspend polio vaccination campaigns on political grounds emphasises this vulnerability. Predicting how long sub-optimal immunity to polio can be sustained in an endemic zone without a new surge in cases is difficult. Certainly, any further interruption of campaigns because of insecurity or politics would dramatically reverse recent gains.

R 1.11: Lack of funding preventing Afghanistan sustaining gains in interrupting wild poliovirus transmission

When wild poliovirus has been interrupted in Afghanistan, the country will have to build resilience to ensure that it can



retain its polio-free status. This will mean strengthening essential immunisation and building a comprehensive system of primary care. Afghanistan will require external funding for this at the point at which it has been successfully certified as polio-free. Although providing such funding raises difficult geopolitical problems, doing nothing is not an option if a polio-free world is to be secured.

These are the circumstances that have led parts of the Afghanistan administration to prioritise addressing the major health problems of the population and the lack of service infrastructure over polio eradication.

R 1.12: Cross-border transmission

The Polio Programme is well aware of the risk associated with the border between Pakistan and Afghanistan. This is probably the most crucial period in the entire history of the programme to ensure the closest cooperation between the two countries to prevent spread. An earlier IMB proposal was to create a joint Emergency Operations Centre for the two countries, but this was not acceptable at the time.



**POLIO
ERADICATION
GOAL 2:
WILL BE MISSED**

POLIO ERADICATION GOAL 2: WILL BE MISSED

The Polio Programme is still in recovery mode from the massive outbreaks of vaccine-derived polio that occurred in 2021.

The number of polio cases, vaccine-derived poliovirus transmission chains, and infected districts, have all been reducing and vaccine-derived polio cases are largely concentrated in four consequential geographies.

This trend cannot be viewed entirely positively. The effectiveness of the response in the most consequential geographies will be a major determinant of when this job gets finished. The four consequential geographies account for almost 75% of the caseload yet, at the time of the July 2023 IMB meeting, 30 countries were involved in responding to outbreaks of vaccine-derived polio.

Given the overall scale of outbreaks, the complexity of the operating environment in the consequential geographies, and the history of setbacks in gaining

effective control of vaccine-derived poliovirus transmission, the IMB is in no doubt that Goal Two **will be missed**.

RISKS (R)

The risk statements that follow should each be read with the prefix “The risk of...” (e.g. Essential immunisation coverage remaining at low levels).

R 2.1: Essential immunisation coverage remaining at low levels

Each case of vaccine-derived polio tells a very clear story of how bad the system of



immunisation actually is. It also indicates the geographies and populations where there is persistently low essential immunisation. The bottom line is that the presence of vaccine-derived poliovirus is a function of the performance of essential immunisation in a country and in its communities and jurisdictions at a more granular level.

The most recent coverage levels for essential immunisation, globally, show an improvement and move towards pre-pandemic levels. However, when coverage data are disaggregated, the greatest gains are generally in those places that have the most

resilient systems. They are not in the poorest, most complex settings.

The 2017 post-certification strategy was mostly driven by the GPEI, in consultation with all the different parties, but many people have told the IMB that it was not a sufficiently collaborative exercise and there must now be pressure to get the right people to the table.

Polio eradication will not get over the finish line without system strengthening. That will mean, for example, the GPEI side identifying zero-dose children at subdistrict levels at six weeks of age.



Availability of such data is very limited. There are sincere attempts to share synergies and learning between polio eradication and the essential immunisation programmes, but they are not yet optimised and need to grow.

The introduction of inactivated polio vaccination is progressing too slowly. The first dose coverage is still suboptimal, globally, and certainly this is so at subnational level. About 50 countries do not have the second dose of this vaccine and have no real plan to achieve coverage with it. Gavi has stated its support for a new hexavalent vaccine that will include an inactivated polio vaccine component. Although this should be regarded as an innovation, it is unlikely to be widely available for at least five years. Some countries are now saying that they will just wait, so as to avoid a separate injection. This is beginning to pose a real risk to delivering on the two doses of inactivated polio vaccine.

Strengthening essential immunisation is a long-term task and in the context of stopping vaccine-derived polio, it is important that polio eradication and essential immunisation teams work closely at global, regional and local levels to identify and raise coverage where weakness is posing the highest risk to finishing the job.



R 2.2: Implementing emergency outbreak responses continuing to be weak

From the outset of the huge task of dealing with the growth in the size and sheer number of polio outbreaks, a great deal hung on the quality of responses. The standard required was to identify detections early, plan and mount the necessary response campaigns quickly, and scale the intensity and geographical scope of the response to match the epidemiological situation at the time.

The basic standards and timelines set for this by the Polio Programme have been very clear. However, performance has been

very variable and, in the case of some countries, very poor. This has increased the spread of the vaccine-derived poliovirus.

The goal of closing down outbreaks became complicated by vaccine policy decisions and vaccine supply problems. Too many countries waited for the arrival of the novel oral polio vaccine instead of responding to the prospect of more children being paralysed by using the available monovalent oral polio vaccine type 2 at a geographical scale and frequency necessary to make a high impact. Standard responses – two full vaccination rounds plus a mop-up – have stopped transmission in 20 of 28 countries to date.

This improved performance still needs to get better when 30% of outbreaks are not being contained, and the target is eradication.

Many countries have large groups of young children who have not been exposed to certain polio vaccines because of the withdrawal of the oral polio vaccine type 2 in 2016, a problem made worse by disruptions during the COVID-19 pandemic and by weak essential immunisation systems. This has made populations more susceptible to polio outbreaks, requiring massive responses to contain them.

R 2.3: Insufficient resources necessitating unsatisfactory prioritisation decisions

Vaccine and campaign resources have been limited. Tough prioritisation decisions have left high-risk areas without preventive vaccination campaigns. Without improvements in response and preventive strategies, the odds of stopping the vaccine-derived poliovirus in the near future become much slimmer.

The worst possible situation would be large surges of cases in different countries and sub-national hot-spots. This could

put the goal of permanently ending all polio cases out of reach for several years. To avoid these serious scenarios, better strategies are needed to increase immunity to type 2 polioviruses in the population.

The capacity to do this is governed by the failures, over different programme financial years, to commit sufficient resources for outbreak response. In turn that has led to the “raiding” of budgets for preventive campaigns.

The whole funding situation and prioritisation process needs a fresh look.



R 2.4: Failure to get vaccine strategy right

The Polio Programme has a mixed record in vaccine policy-making, planning and implementation. When the Polio Programme interrupts transmission of poliovirus, another journey on vaccines begins. It is important that lessons from the past are learned and that history does not repeat itself.

Laying out the right path to achieve success for the post-certification phase of polio eradication and, in the short-term, achieving the second goal of the *Polio Eradication Strategy 2022–2026* embodies great strategic complexity.



It includes: vaccine policy; logistics; manufacturing choices; the implementation of vaccination programmes; countries' decision-making and accountability; targeted surveillance during vaccine deployment; scientific evidence; and public information campaigns.

Achieving clarity on the way forward is urgent and needs coordinated decision-making, thoughtful planning and international collaboration. Countries, international organisations, and vaccine manufacturers must align on common goals, methods and timelines. This alignment will ensure consistency in using various vaccines and approaches and help to avoid

problems with over- or under-supply. Collaboration must extend to sharing data and insights to understand the poliovirus's spread and vaccine effectiveness, along with comprehensive planning for unexpected challenges.

Harvesting the experience of the phased cessation will be critical to ensuring the process can be carried out safely and efficiently, taking the world closer to a polio-free future.

R 2.5: Large outbreaks of type 1 vaccine-derived polio

The current rise of type 1 vaccine-derived poliovirus is a very serious problem that risks destabilising the whole Polio Programme. It is a dangerous virus with the same properties as

type 1 wild poliovirus. It has an incredible capacity to transmit. It is said to have 10 times greater capacity to paralyse than type 2 vaccine-derived poliovirus.

Immunity to type 1 poliovirus took a hit during the pandemic and with the fall-off in essential immunisation coverage.

The emergence of type 1 vaccine-derived poliovirus in a vulnerable population could set off a dangerous chain reaction. In a community where immunisation coverage has been very low, and public health systems are weak, type 1 vaccine-derived poliovirus would find fertile ground to take hold. Given its greater virulence than type 2 vaccine-derived poliovirus, the expectations of the impact of the latter would



not hold true. Changes in the geographical movements of type 1 vaccine-derived poliovirus could lead to a rapid escalation in the number of paralytic cases. Type 1 vaccine-derived poliovirus is on the continent of Africa. If it became fully established in Nigeria, which is already vulnerable, with its weak essential immunisation coverage, the result could be catastrophic.

The Polio Programme is not regarding this with the seriousness that it would be an upsurge of type 1 wild poliovirus.

R 2.6: Nigeria eliminating polio again and remaining vulnerable to another slide back because of lack of development of long-standing vision to develop strong, comprehensive primary care

Nigeria grappled with the challenge of having such intensive international focus on it interrupting transmission

of wild poliovirus that the polio eradication programme completely overshadowed the importance of strengthening essential immunisation in the country. As a result, the surge in vaccine-derived polio that became intercontinental in scope meant that the Nigeria programme is having to do it all over again, because the vaccine-derived virus is having much the same paralytic effect as the wild poliovirus did.

The operating environment in Nigeria has many similarities with the first time around, although the insecurity is in different places. The challenge is equally formidable. Progress is occurring but is taking huge effort and leadership skill from the Nigeria polio team.

Meantime, just as when striving to eliminate wild poliovirus transmission, there has been

no capacity or funding to set in motion transformative measures for strengthening essential immunisation.

There are very critical and fundamental weaknesses in Nigeria's health system that no amount of polio vaccination campaigns can resolve.

In addition to the 100 zero-dose local government areas, the Nigeria programme has identified another 100, collectively being termed the "most vulnerable places". Resources have been spread thinly across all 774 local government areas; attention is now being focused on these 200 local government areas, not only where there are circulating vaccine-derived polioviruses but also on areas with the lowest essential immunisation coverages. The other 574 local government areas will get a lighter touch.

Over the last 20 years, in Nigeria, the Polio Programme and its dedicated funding, has been a dominant feature of the health sector. Many other health indices have either flatlined or shown only transient improvement. The country's government has made regular policy commitments to develop a strong system of primary health care.

There has been little commensurate response to create a powerful and unified impetus towards this goal by external partners working in-country. Some partners come with their own preferred initiatives (e.g. nutrition, family planning), rather than offering support to strengthen systems and infrastructure more holistically. More advocacy for a clear focus on primary health care – the government's priority – would shift the status quo from what is seen as "lip service" to integration.

Unless Nigeria is helped to strengthen its essential immunisation and primary care systems, any immediate gain from interrupting poliovirus transmission will be lost in a fog of unsustainability.

R 2.7: Temporary diminished commitment if 2023 goals are not achieved

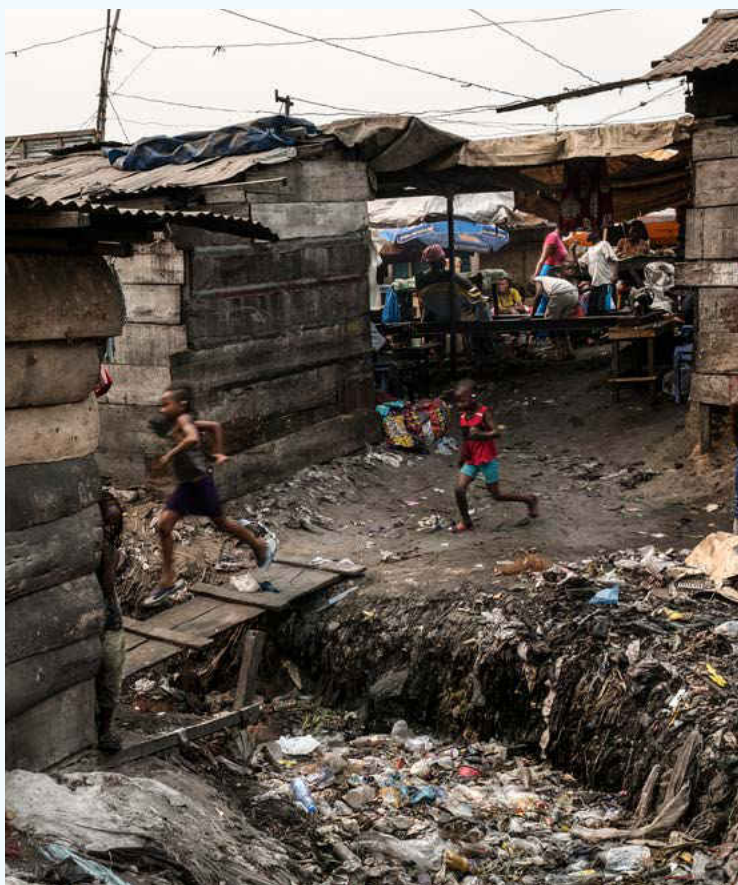
When the Goal Two deadline of the end of 2023 is not met, inevitably tired and hard-working polio workers out in the field will feel a sense of disappointment and loss of morale. It is important

that global and national Polio Programme leaders, together, particularly, with frontline team leaders communicate the message that the pressure is not being eased. 2024 will be a vital year. Indeed, the pressure will be on more than ever because the huge funding implications will be very serious. Donors, too, need to feel that both goals are really close to being achieved.

2.8: Collapse or major disruption of supply of novel oral polio vaccine.

The Polio Programme is now heavily dependent on the novel

oral polio vaccine for its outbreak responses. The sole supplier of the vaccine is Bio Farma. Testing problems led to supply shortages at the end of 2022 and beginning of 2023. Although this has been resolved, and supplies are expected to meet all needs for the rest of 2023 and into 2024, reliance on a single supplier is hugely risky. A second supplier is coming in at some point in 2024, but until then the Polio Programme is extremely vulnerable to a catastrophic supply failure.





DATA INSIGHTS

1 All paralytic polio cases: an unfavourable trend

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	TOTAL
African Region	53	48	40	13	34	18	1	22	65	328	568	543	703	165	2601
Eastern Mediterranean Region	6	19	29	53	22	2	1	74	13	26	547	156	169	3	1120
European Region	0	0	0	0	0	2	0	0	0	0	0	2	0	0	4
Region of the Americas	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
South-East Asian Region	0	0	0	0	0	2	0	0	1	6	0	0	1	3	13
Western Pacific Region	0	0	2	0	0	8	3	0	26	18	2	0	0	0	59
TOTAL	59	67	71	66	56	32	5	96	105	378	1117	701	874	171	3798

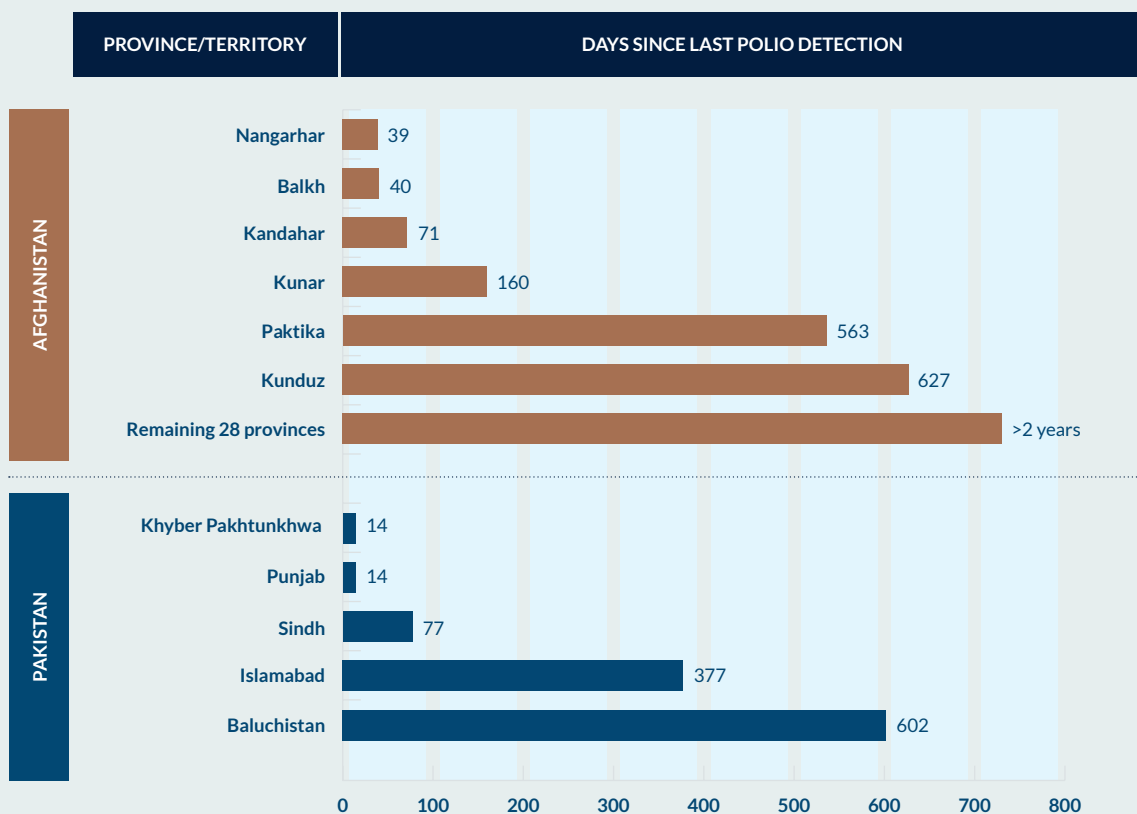
Source: WHO. Data as of 25 July 2023 (Exported on 10 August 2023)

2 Afghanistan and Pakistan: Continuing poliovirus presence when facing deadline for interrupting transmission

	2022												2023						
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J
AFGHANISTAN																			
Wild poliovirus case	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2	3	0	0
Wild poliovirus environmental sample	0	0	0	0	1	0	1	0	1	5	9	5	7	5	3	8	6	3	0
PAKISTAN																			
Wild poliovirus case	0	0	0	2	8	4	0	5	1	0	0	0	0	1	0	0	0	0	1
Wild poliovirus environmental sample	0	0	0	1	2	1	8	12	7	1	5	0	2	1	0	3	5	1	3
Type 1 vaccine-derived poliovirus environmental sample	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Type 2 vaccine-derived poliovirus environmental sample	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Type 3 vaccine-derived poliovirus environmental sample	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0

Source: WHO. Data as of 31 July 2023 (Exported on 8 August 2023)

3 Afghanistan & Pakistan: Lengthening time since detection



Source: WHO. Data as of 31 July 2023 (Exported on 8 August 2023)

4 Afghanistan's polio cases puzzling vaccination history

COUNTRY	LOCATION	DATE OF ONSET	NUMBER OF ORAL POLIO VACCINE DOSES		
			ROUTINE	CAMPAIGN	TOTAL
AFGHANISTAN	Nangarhar, Batikot	12/04/2023	3	18	21
	Nangarhar, Kot	14/04/2023	3	25	28
	Nangarhar, Nazyan	08/05/2023	3	18	21
	Nangarhar, Behsud	15/05/2023	1	15	16
	Nangarhar, Durbaba	18/05/2023	2	20	22
PAKISTAN	Khyber Pakhtunkhwa, Bannu	20/02/2023	0	7	7
		11/07/2023	2	0	2

Source: WHO. Data as of 31 July 2023 (Exported on 8 August 2023)

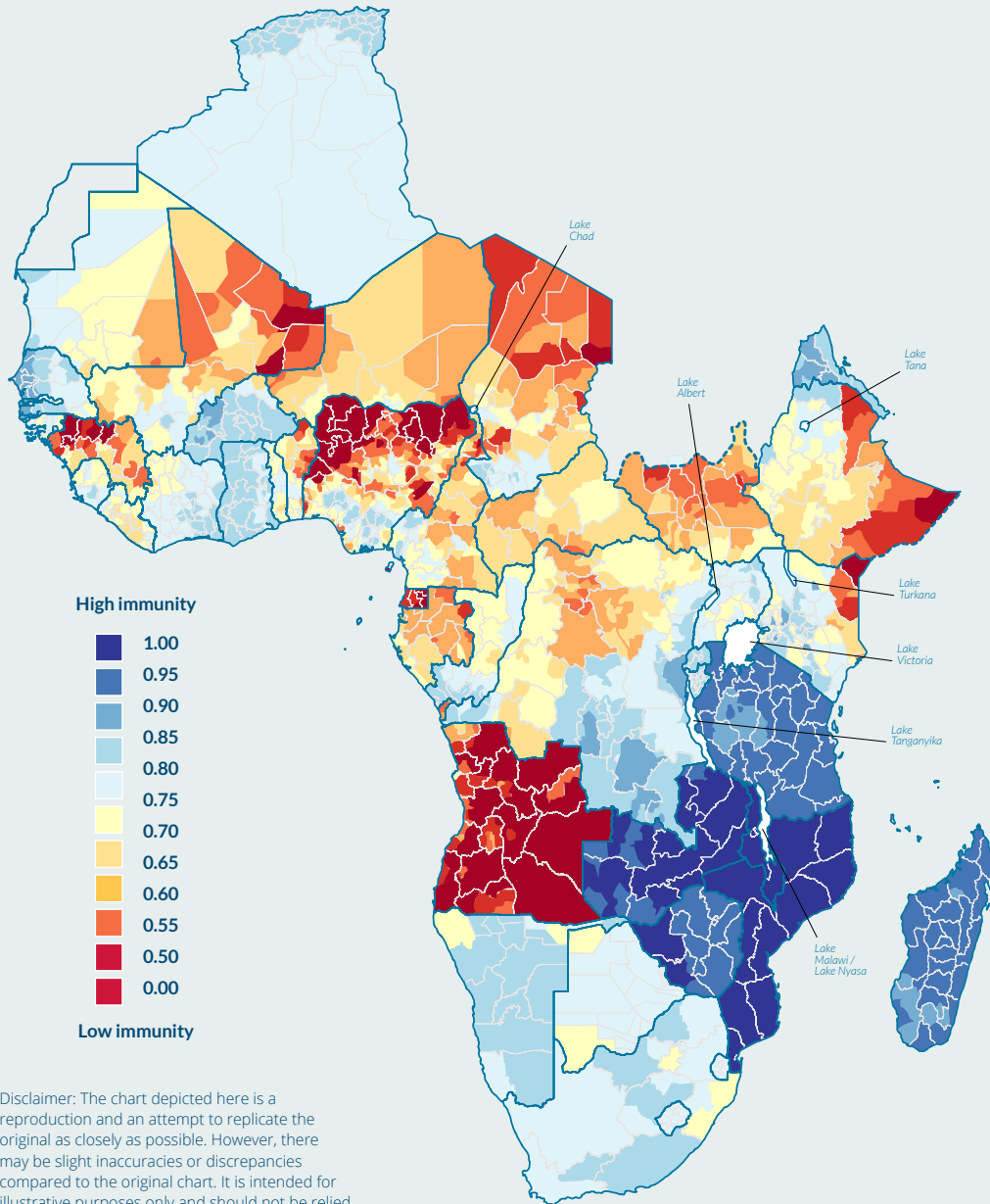
5 Quality control lapses: High-risk districts missing post-campaign targets

COUNTRY	NATIONAL CAMPAIGN	HIGH-RISK AREA	PERCENT OF "LOTS" THAT DID NOT MEET 90% QUALITY THRESHOLD
AFGHANISTAN	March 2022	Kunar	70%
		Laghman	100%
		Nangarhar	38%
		Nuristan	33%
	May 2022	Kunar	10%
		Laghman	50%
		Nangarhar	12%
		Nuristan	0%
PAKISTAN	March 2022	Bannu	13%
		Dera Ismail Khan	12%
		Lakki Marwat	9%
		Tank	22%
		North Waziristan	75%
		South Waziristan	52%
	May 2022	Bannu	4%
		Dera Ismail Khan	28%
		Lakki Marwat	10%
		Tank	40%
		North Waziristan	17%
		South Waziristan	59%
	January 2023	Bannu	0%
		Dera Ismail Khan	20%
		Lakki Marwat	0%
		Tank	50%
		North Waziristan	33%
		South Waziristan	no data available

Source: Lot Quality Assurance Sampling, X-Mart Polio Mart Afghanistan; Pakistan National Emergency Operations Centre. Data as of 11 August 2023.

6 Where next? Africa's immunity gaps exposed by insufficient immunisation activities

TYPE 1 ~ Age group: 6-36 months old



Disclaimer: The chart depicted here is a reproduction and an attempt to replicate the original as closely as possible. However, there may be slight inaccuracies or discrepancies compared to the original chart. It is intended for illustrative purposes only and should not be relied upon for making critical decisions or analyses.

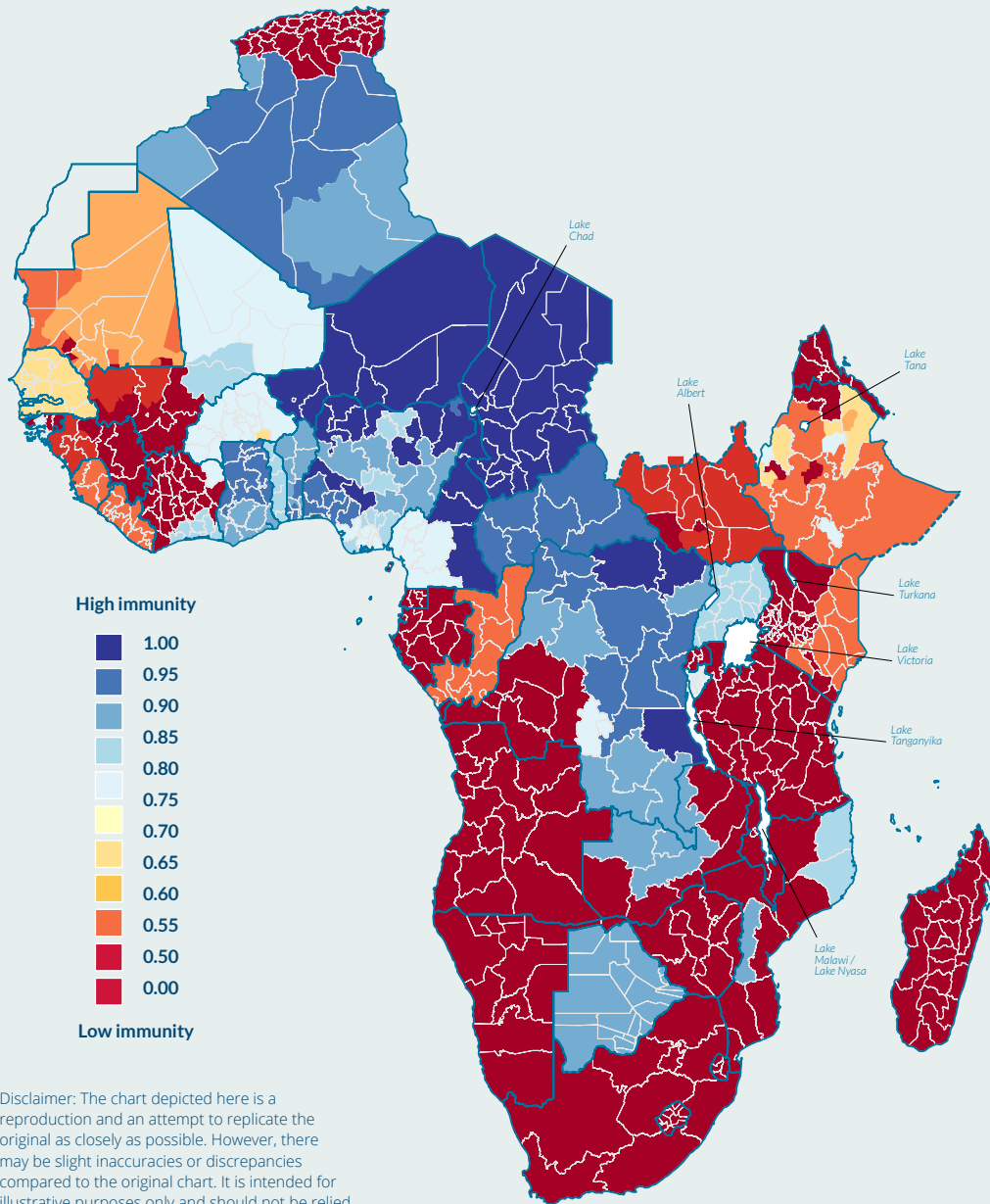
The boundaries shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. Final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined.

----- = Disputed border

Source: Institute for Disease Modelling, Bill and Melinda Gates Foundation. Data as of July 2023.

6 Where next? Africa's immunity gaps exposed by insufficient immunisation activities ~ continued...

TYPE 2 ~ Age group: 6-36 months old



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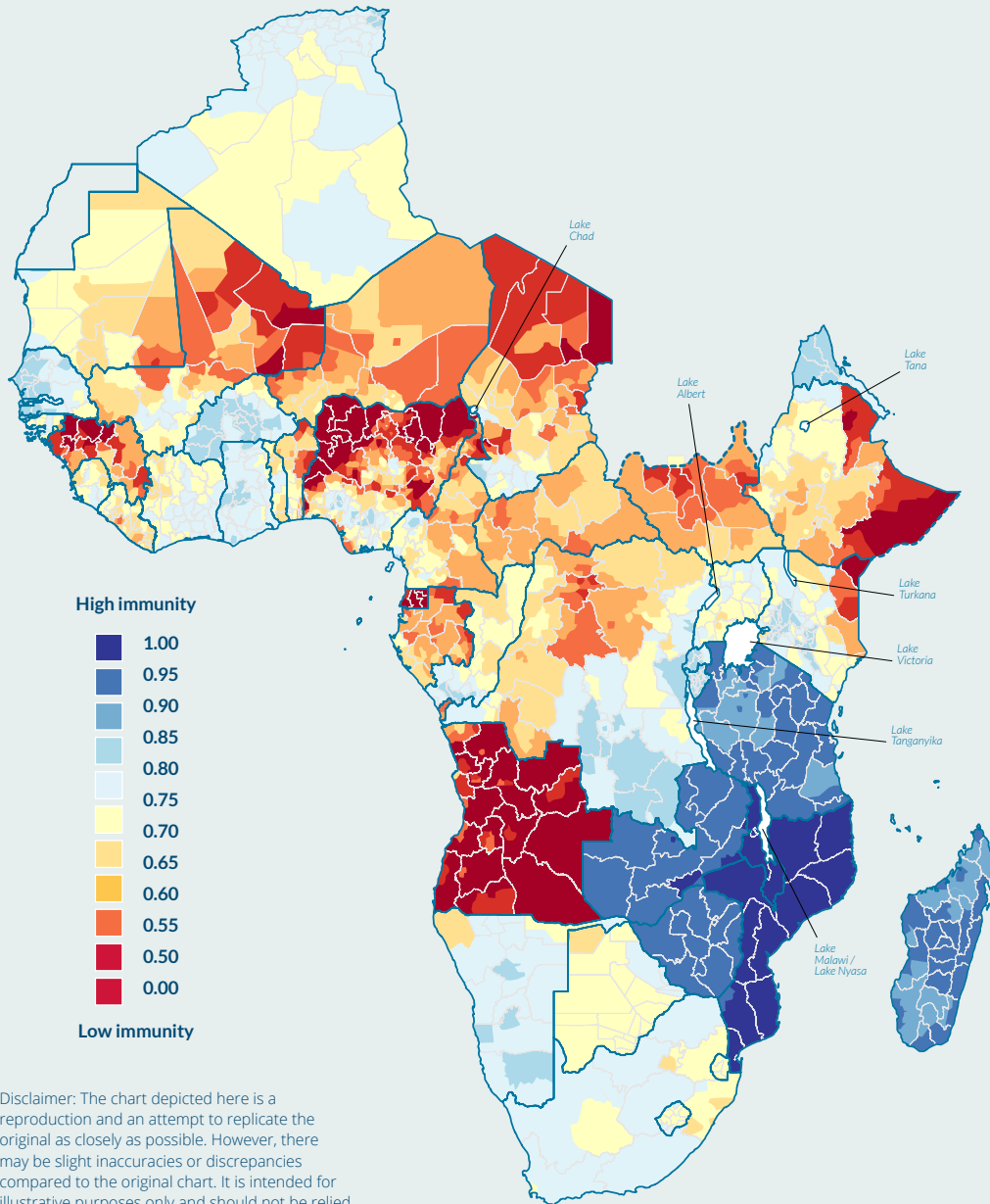
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Source: Institute for Disease Modelling, Bill and Melinda Gates Foundation. Data as of July 2023.

6 Where next? Africa's immunity gaps exposed by insufficient immunisation activities ~ continued...

TYPE 3 ~ Age group: 6-36 months old



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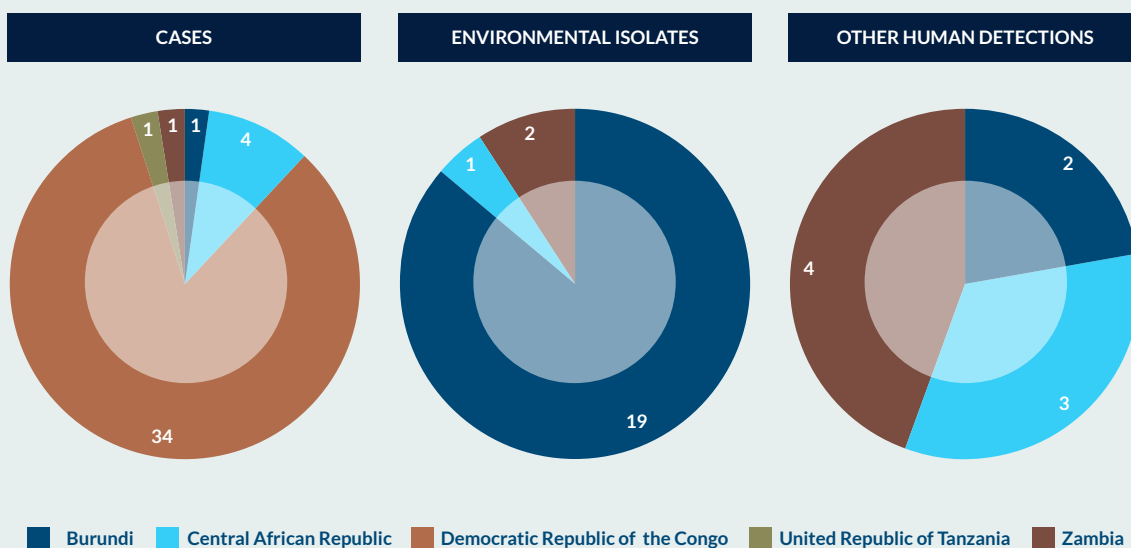
Source: Institute for Disease Modelling, Bill and Melinda Gates Foundation. Data as of July 2023.

7 Polio’s multiple fronts unaddressed – Emerging hotspots and intractable outbreaks active in 2023 – vaccine-derived

COUNTRY OF FIRST DETECTION	NUMBER OF POLIOVIRUS STRAINS	FIRST DETECTION DATE	POLIO CASES FROM ACTIVE STRAIN(S)	ENVIRONMENTAL ISOLATES FROM ACTIVE STRAIN(S)	AFFECTED COUNTRIES
Central African Republic	3	24-Dec-22	7	1	1
Indonesia	1	09-Oct-22	4	0	1
The United Kingdom	1	24-May-22	2	93	4
Nigeria	1	26-Jul-20	573	489	15
Democratic Republic of the Congo	7	15-Oct-21	432	47	10
Somalia	1	22-Oct-17	36	63	3
Yemen	1	20-Jul-21	221	64	3
Total	15	-	1275	757	37

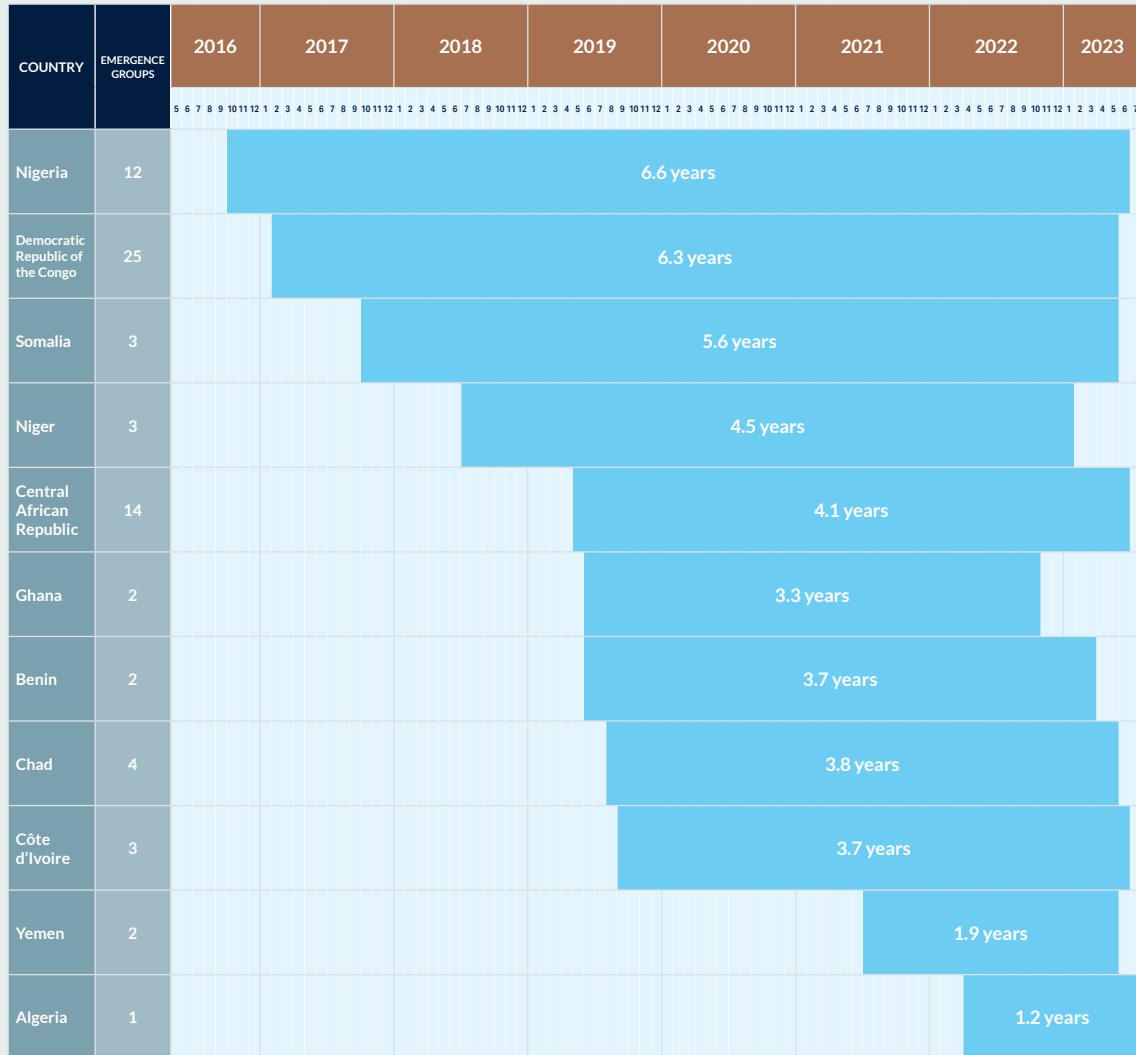
Source: WHO. Data as of 31 July 2023 (Exported on 8 August 2023).

8 Vaccine-derived polio cases associated with novel oral polio vaccine type two use



Source: WHO. Data as of 31 July 2023 (Exported on 8 August 2023).

9 Outbreaks that overstayed: Long-lasting type two vaccine-derived outbreaks



This chart illustrates the continuous circulating type 2 vaccine-derived detections post-2016 switch, focusing on countries with >6 months of detections in 2022-2023 and >365 days of continuous detection, defined as: 1) no >6-month gaps in the same emergence group, 2) consecutive monthly detections of different emergence groups, or 3) a combination of both. Countries that halted transmission after >1 year and show no recent signs of recurrence are excluded.

Source: WHO. Data as of 31 July 2023 (Exported on 8 August 2023).



CONCLUSIONS

CONCLUSIONS

The key indicators in the endemic countries, by which progress towards interrupting wild poliovirus transmission has traditionally been assessed, have all moved in a positive direction over the last 12 months.

In Pakistan, the long-standing and intractable poliovirus circulation in most of the traditional endemic reservoirs also seems to have been eliminated. The clearing of Karachi came as a welcome and pleasant surprise even to the gloomiest of sceptics. Further, as detections have occurred, the outbreaks have been effectively shut down rather than wild poliovirus circulation becoming re-established.

These are signs that the Polio Programme in Pakistan is getting closer to a consistent eradication-standard of performance.

The Polio Programme in Afghanistan is performing better in endemic zones and outbreak responses. All but one type 1 wild poliovirus genetic cluster has been eliminated from the country. Levels of access are the best they have been since 2018.

House-to-house polio vaccination campaigns in Afghanistan have increased from 50% to 80%. Preparedness and response plans for potential outbreaks demonstrate a proactive approach to any resurgence of polio cases. In areas where house-to-house campaigns are not permitted, work has been focused on strengthening site-to-site vaccination campaigns, supported by the involvement of women vaccinators, an important step to enhance immunisation coverage.

These factors provide some grounds for optimism, and show the need to continue advancing established polio activities. Persistent endemic poliovirus transmission in east Afghanistan, along with the risk of amplification in Kandahar, are the main threats to stopping the wild



poliovirus. Further progress of Afghanistan's improving trajectory will be determined by the quality of technical programme performance, internal national politics and major geopolitics.

Disappointingly, poliovirus transmission survived the low season in both countries, which is not a positive sign.

As the detailed analysis in this report makes clear, the complexity of the remaining barriers to stopping transmission of wild poliovirus in both endemic countries is too great to be surmounted in the remaining 18-week period.

That is why the IMB considers Goal One of the strategy to be **off track** and it is high likely that it **will be missed** altogether.

In the IMB's view, attention should now be turned to ensuring that the gains that moved the Polio Programme quite close to achieving its first strategic goal on wild poliovirus are not lost, and are built on very quickly.

Is the goal of interrupting wild poliovirus transmission in Pakistan and Afghanistan, achievable then in 2024? It is possible but not a shoo-in.



THE NEED FOR A CLEARER PATH TO INTERRUPTION OF TRANSMISSION IN 2024 IN PAKISTAN

Stopping transmission in Khyber Pakhtunkhwa province will be tough even in 2024.

The IMB cannot yet see a convincing path to interrupting transmission in this province.

If it is to happen, then the security disruptions and constraints, as well as the frequency of campaign boycotts in south Khyber Pakhtunkhwa, will have to be reduced. These issues arise because the oral polio vaccine is prominently associated with the “wants” of the Pakistan Government and the international world. Too many communities see polio vaccination as something being imposed upon them, rather than a service provided for their benefit. It therefore carries massive bargaining power in the eyes of key communities and interest groups.

The integrated delivery design is being used to try and insulate the oral polio vaccine from this hostile reaction and if it can achieve the necessary coverage and reach, this could be the answer. However, the best solutions will come from the creativity of the local teams, working with community members and their representatives (rather than top-down instructions). Such an approach is sometimes called



“micro-innovation.” Adaptability, flexibility, observing, listening, learning and respecting should all be key elements of this way of finding a way forward.

The IMB was told that a standardised approach to integration does not work in Pakistan. It is an approach that should be customised

and applied in different places in different ways. In Karachi, where the infrastructure is better developed, a package of measures, delivered through outreach, worked very well. In Khyber Pakhtunkhwa province, health camps had more impact because the infrastructure is not well developed there.

BALUCHISTAN'S POLIO PROGRAMME NEEDS EQUAL PRIORITY OF ATTENTION TO KHYBER PAKHTUNKHWA PROVINCE'S

The IMB does not have full confidence in the resilience of the Baluchistan Polio Programme. Making interruption of wild poliovirus transmission in 2024 feasible also requires major strengthening of the performance of the Polio Programme in Baluchistan. This should be of equal priority to the work in south Khyber Pakhtunkhwa.

NOT TAKING FOR GRANTED SMOOTH RUNNING OF THE POLIO PROGRAMME'S PLANS FOR THE ELECTION IN PAKISTAN

The Polio Programme in Pakistan has benefited from a recent period of very strong political support and involvement but an election is coming.

In Pakistan, polio eradication has had the personal and direct leadership of the Prime Minister. In the past, national elections in the country have broken continuity of leadership and derailed progress.

Elections are scheduled for late in 2023. The IMB was assured that political commitment and consensus will be steadfast, but this will be a worrying period for the Polio Programme.

Problems are likely to come from the loss of, or reduction



in, security support for polio vaccination in high-risk areas. District Commissioners, the police force and the army, will be posted onto election duty. This will affect the polio calendar and all the necessary programmatic activities such as the timing of planned vaccination campaigns, training and surveillance.

In the Pakistan governance system, the Chief Secretary at federal and provincial level is the most senior civil servant. They are the highest-ranking administrative officers within a province, overseeing all provincial government functions. Their responsibilities encompass the overall administration of the province, coordinating various departments and governmental

functions, not limited to health. They are currently very directly engaged with ensuring a strong performance of the Polio Programme in their provinces. It is essential that this hands-on level of involvement continues.

AFGHANISTAN: MOVING FROM THE TRANSACTIONAL APPROACH TO NATIONAL OWNERSHIP FOR KEEPING CHILDREN SAFE

Achieving cessation of wild poliovirus transmission in Afghanistan in 2024 will be even tougher.

The Polio Programme in Afghanistan continues to face great complexity in its operating environment. The ongoing

humanitarian crisis is the dominant feature, along with associated political instability, severe economic contraction, high levels of malnutrition, and insecurity.

One critical question looms large: does the new administration in Afghanistan genuinely want to eradicate polio, or does it view polio through a transactional lens?

In the period leading up to the current administration – the Taliban – taking power, when it opposed the Afghanistan Government, it restricted access so that many Afghan children could not receive the polio vaccine. On regular occasions the United Nations agencies negotiated additional access.

Now that the Taliban is in power and responsible for the health of the country’s children, it seems unwilling to order its Polio Programme to perform to an eradication standard. Instead, it continues to negotiate, most recently asking for resources to strengthen hospital-based services.

In the last seven years, the majority of polio cases across the endemic countries have been among children from the Pashtun ethnic population, which shares the same cultural background as most members of the governing administration.



SOUTH AFGHANISTAN: AVOID AN EXPLOSIVE CROSS-BORDER OUTBREAK BY ADOPTING PROVEN INTERNATIONAL BEST PRACTICE IN PROGRAMME DESIGN

House-to-house vaccination is the gold standard for polio eradication. It needs to be the delivery modality in all of Afghanistan. The IMB was told that it is not being authorised in the south because of the authorities’ fears of “social infiltration”. Without change there is a very high risk of an explosive outbreak of

polio in Kandahar City that could also then flow across borders, paralysing children in neighbouring countries.

EAST AFGHANISTAN: AVOID FURTHER CAMPAIGN CANCELLATIONS AND EXPLAIN THE PUZZLING VACCINATION HISTORY OF ALL THE POLIO CASES IN NANGARHAR PROVINCE

In east Afghanistan, an area that has suffered from breaks in the continuity of polio campaigns because of insecurity and, more recently, for political reasons,

population immunity levels need to be further increased and sustained. This means making sure that regular, intensive high-quality campaigns are running. If there is a substantial rise in polio cases in the east, and an outbreak response is ineffective, it is likely to take two or even three years to interrupt transmission.

The five reported cases of polio in 2023 (by the time

of the IMB meeting) in Nangarhar province in the east had received between 16 and 28 doses of polio vaccine. The implausibility of children with such an extensive vaccination history getting paralytic polio needs to be explained. Informal IMB enquiries led to the response that this could be interpreted as an anomaly, similar to those observed in the final stages of polio eradication in India. There, the phenomenon

was believed to have resulted from chronic enteric infections and malnutrition among the vaccinated children (emphasising again the importance of water and sanitation standards). However, it is doubtful that east Afghanistan is yet epidemiologically in the polio “end game,” for that counterintuitive finding to be plausible.



AFGHANISTAN NEEDS HELP AND FUNDING TO BUILD A RESILIENT HEALTH SYSTEM AFTER ENDING POLIOVIRUS TRANSMISSION

The severe humanitarian crisis, withdrawal of non-governmental organisations and a collapsing health system impede the Afghanistan’s ability to interrupt poliovirus transmission. The country’s resilience in the pre- and post-certification period will be compromised without funding to strengthen essential immunisation and primary care.

Once wild poliovirus transmission in Afghanistan has been interrupted, the country will need substantial funding to secure its polio legacy and contribute to a polio-free world with no resurgence of polio. This will mean rapidly building strong essential immunisation systems within a comprehensive network of primary care. The country’s external funding needs is a delicate geopolitical matter, but failure of polio post-certification performance

in the last of the endemic countries is not an option.

THE MESSAGE FROM THE IMB TO THE POLIO PROGRAMME ON THEIR ATTITUDE TO VACCINE-DERIVED POLIO: “NO MORE MR NICE GUY”

The GPEI’s approach to vaccine-derived poliovirus has been a turbulent journey marred by rigid attitudes, missed opportunities, lack of foresight, and an inability to adapt swiftly to evolving circumstances.



The IMB has warned of the dangers many times in the past. For example, in its 13th report (*Polio Will Not End Everywhere Until Everywhere Ends It*) in 2016, the IMB said:

“During the majority of the time that the IMB has monitored the Polio Programme, the GPEI leadership has asserted that the main effort should be concentrated on the endemic countries and that other smaller pools of poliovirus transmission would be eradicated in their wake. The IMB has not shared this philosophy and warned about the dangers.

[...] it cannot be certain that the end of transmission across the whole world will rapidly follow. One of the reasons for this is the emergence of vaccine-derived poliovirus in many places. These viruses are making multiple, rapier-like thrusts through the world’s polio defences. This is most serious when such viruses begin their own chains of transmission.

... It is alarming that the Polio Programme has failed to meet the standards for dealing with outbreaks of vaccine-derived polioviruses ... Slow reactions and delayed decision-making when viruses are discovered could be the Polio Programme’s downfall unless it learns quickly from these dysfunctions.”



The world is now in a situation where vaccine-derived polioviruses are paralysing nearly 50 times more children than wild polioviruses. Of the 674 confirmed cases of paralytic poliomyelitis reported during the 12 months to 31 July 2023, 16 were caused by type 1 wild poliovirus (2%), 217 by circulating type 1 vaccine-derived poliovirus (32%), 436 by circulating type 2 vaccine-derived poliovirus (65%), and five were positive for both types of vaccine-derived poliovirus (1%). These polio cases were reported from 28 countries, 21 of them in Africa.

Any poliovirus that paralyses a child should be regarded as a failure for polio eradication. The programme should see itself very much as a prevention

programme. The IMB still hears vaccine-derived poliovirus being described as a “fake virus”. The IMB repeats: every case is a failure.

LEARNING FROM THE “SWITCH” AND OTHER UNFORCED ERRORS

The Polio Programme’s attitude towards the vaccine-derived poliovirus as being a minor problem is long-standing and entrenched.

It was more recently compounded by the failure to properly prepare for the 2016 switch from trivalent to bivalent oral polio vaccine, the sudden reduction of polio staff in the African Region, the policy of countries to wait for the novel oral polio vaccine

rather than using available outbreak vaccines, and the performance weaknesses in outbreak management. These policy and management areas turned out to be unforced errors by the Polio Programme.

The impact has been severe. Since 2016, over 3,000 cases of polio due to type 2 vaccine-derived poliovirus have been reported, with an average of 45 children paralysed each year in the six years leading up to the switch (including the switch year) and an average of 497 per year in the six years after.

The GPEI’s Strategy Committee has commissioned a formal evaluation of the 2016 global withdrawal and switch. The



evaluation aims to generate critical lessons learned from the oral polio vaccine type 2 withdrawal, in order to guide the direction of future withdrawal and move smoothly to a polio-free world.

This learning will be critical in formulating the right policies when the time comes for further oral polio vaccine withdrawals.

THE POLIO PROGRAMME HAS TO GET THERE ON VACCINE-DERIVED POLIO IN 2024

It is right to focus on eliminating polio from the four consequential geographies. In particular, Nigeria and the Democratic Republic of the Congo have been engines of transmission for paralysing

children in many other places. Ending transmission of vaccine-derived poliovirus even in those countries, by the end of 2023, is much too complex a task. That is why the IMB has judged that Goal Two of the *Polio Eradication Strategy 2022-2026* as **will be missed**.

Looking into 2024, does the Polio Programme have the right strategy to stop vaccine-derived poliovirus in that year?

The prospects for this in the consequential geographies in 2024 must be viewed as still very difficult.

Nigeria has managed a 95% reduction in the cases of vaccine-derived polio since they peaked in 2021. The genetic diversity

of the polioviruses has been reduced by 86%, from seven different lineages in 2019 to just one in 2023.

At the time of the July 2023 IMB meeting, there had been no new circulating type 2 vaccine-derived poliovirus of this lineage detected in Nigeria for over four years. The last axis of intractable transmission is currently in three states in the north-west of the country: Zamfara, Sokoto and Kebbi. They are very difficult places for a Polio Programme to operate successfully.

In the three states, the key risk factors and challenges for persistent transmission are: insecurity; concealment of non-compliance (including fake finger marking); highly mobile, nomadic and internally displaced populations that are being missed by all forms of immunisation; poor sanitation; and a high prevalence of malnutrition. Also, a high fertility rate means that there is a constantly accumulating cohort of children even while those already alive in the population have not been covered by vaccination services.

The Nigeria polio team is highly skilled, deeply experienced and very determined so there is a very good chance that it will finish the job during 2024. The difficulty is whether it will sustain the gain or whether there will be a slide back, as happened after the eradication of wild poliovirus. In the months after the interruption of transmission,



small outbreaks, if they can be quickly closed down, would not be too much of a concern. The real problem will be if there is a big or uncontrolled outbreak with a cross-continental surge. Immunity levels and outbreak response capacity and capability are not yet at a resilient level across many African countries.

Thus, much depends on Nigeria's own resilience. Here, there are deep concerns. Essential immunisation coverage is too weak, in too many communities. The country's vision of strong, comprehensive primary care is hardly out of the starting blocks. The political will below federal level does not seem to be strong enough; this is coupled with a major lack of resources.

If the Polio Programme does not want to be thrown completely off course in a year or two's time, it must mobilise support for Nigeria to take transformative action to strengthen its primary care system (including essential immunisation), and in so doing create robust polio resilience.

The Democratic Republic of the Congo has not been a "super-spreader" of vaccine-derived polio in the way that Nigeria has, but it has transmitted infection to other countries and, thus, is regarded as the second most important consequential geography. It has been endemic for both types of vaccine-derived poliovirus for a long time with little indication, until recently, of determination to grip the problem.



In its 15th report (*Every Last Hiding Place*), in 2017, the IMB said this about the country:

"In some ways, the outbreak in the Democratic Republic of the Congo could be seen as the shape of things to come. From previous history, the country was a hotbed for vaccine-derived poliovirus development. The country was hit by the outbreak because of the context of declining type 2 poliovirus immunity and also very low population immunity because of the underperformance of the routine immunisation programme.

... The President of the Democratic Republic of the Congo must ask for the outbreaks of vaccine-derived poliovirus inside his country to be declared as a Public Health Emergency of International Concern and must follow this through with greatly improved performance of vaccination and other core public health functions."

It is deeply disappointing that the Polio Programme has accepted such intractability in its spectrum of performance. In some ways, robust action in the Democratic Republic of the Congo at the outset could have set a course correction for a more comprehensive strategy: a goal of ending polio (the “outcome”) rather than ending wild poliovirus (the “process”).

It might just have saved a lot of children becoming paralysed, a lot of effort and a great deal of money. The last of these gains could have been used for more preventive campaigns, thereby creating a virtuous circle out of the course correction. It is another example of how difficult it has been to get the Polio Programme to change its mind or properly listen to differing opinions.

Six years on from the IMB’s critique of the Democratic Republic of the Congo, the government of this country has it all to do.

The IMB was impressed with the commitment and focus of the country’s polio team when they met them in July 2023. Everything depends on whether they are able to deal with the complex operating, governance and political environments in which they are trying to get results.

The country has been designated as a Grade 3 complex emergency in the humanitarian landscape.



The government is faced with multiple priorities. There is a pressing need to respond to two distinct polio strains, type 1 and type 2 vaccine-derived poliovirus, and a broader push to enhance essential immunisation across the nation. Navigating this complexity demands careful consideration of what is feasible within the context of the available resources and capabilities. In the Democratic Republic of the Congo, misinformation and vaccine hesitancy continue to hinder vaccination efforts. The mistrust towards health authorities and vaccine campaigns has contributed to the threat to the country’s progress on polio eradication.

THE SEEDS OF FAILURE ON VACCINE-DERIVED POLIO: THERE HAS TO BE A HUGE INCREASE IN PREVENTIVE VACCINATION CAMPAIGNS, BUT THERE IS NOT ENOUGH MONEY

The prospects of interrupting transmission in the countries with areas of consequential geographies are only part of a bigger picture when forecasting whether Goal Two of the strategy can be achieved in 2024. It is important, too, to consider what is possible and likely for all polio-affected and polio-vulnerable countries, the majority of which are in Africa. On this question, the issue that keeps resurfacing

is that the Polio Programme is regarded as having sacrificed too many potential preventive campaigns in favour of dealing with outbreaks.

As is clear from the analysis earlier in this report, much of this comes down to availability of resources.

By concentrating on closing down outbreaks, it is being argued that this will eventually clear vaccine-derived poliovirus completely without dissipating GPEI outbreak resources on building immunity in too many of the vulnerable countries.

The IMB very much doubts this.

The IMB can see that the Polio Programme is being pragmatic on this point, given the financial limits set and given the urgent need to stop further spread.

It is clear that the scale and the timeliness of response is highly constrained because of resources. It was vaccine resources before, now it is simply financial resources that are limiting the programme's speed of action for type 1 and type 2 vaccine-derived poliovirus. This likely means further spread.

Looked at geography-by-geography, outbreaks could be closed down in many of

the countries, but they are at multiple sites and with different timings. That is the difficult part, particularly with shortages of resources. So, the response level often does not address all the risks at the same time. Resources are for all intents and purposes currently the Achilles heel in achieving strategy Goal Two in 2024.

In Africa, if immunisation rounds are reduced too far, it is not overdramatic to say that there could be reversion to a scenario where there are many hundreds of polio cases, with children being paralysed.

The resource constraints mean that prioritisation is necessary in Africa. Currently, one priority area of focused action is Nigeria and the Lake Chad Basin countries, together with the Democratic Republic of the Congo and a few other countries that share borders with it, like the Republic of the Congo.

The Polio Programme in the African Region is doing its best to carefully focus its approach, but prioritisation seems illogical when numerous widespread immunity gaps still prevail. These areas are like tinder boxes ready to spark into an outbreak.



THE PIVOTAL ROLE OF ESSENTIAL IMMUNISATION: SHORT- AND LONG-TERM

Ultimately, strengthened essential immunisation will provide much of the answer. This will depend on countries, donor priorities and the global health agencies, particularly WHO, Gavi and UNICEF.

This whole subject is extensively discussed in the recently published 6th TIMB report, *Ambiguities and certainties: Meeting the diverse expectations of polio transition*.

The change in governance whereby WHO has consolidated, in management terms, polio transition with polio eradication means that WHO's Polio Department will be more directly involved in work to strengthen essential immunisation.

As the 6th TIMB report makes clear, the Polio Programme has high levels of earmarked funding and the power to allocate money in return for delivery of results, together with performance management and accountability mechanisms.

The essential immunisation programme has none (or very few) of these things. Progress to transform essential immunisation systems will be slow and the capacity to very actively support the current drive to interrupt transmission of the two polioviruses more limited.

The Polio Programme needs to do a far better job of seeing ahead when there is an opportunity for integrated campaigns to happen, and plan accordingly to bring in the polio element. Gavi has a role to play as well in making sure that the polio teams are at the table when wider campaigns are being planned.

It would greatly help, for example, to scale up the co-delivery of bivalent oral polio vaccine during funded campaigns for measles and yellow fever. This is "low hanging fruit" for raising polio immunity and is not being done systematically at present.

It is also relevant that GPEI is still scheduled to be dissolved in the period after the interruption

of poliovirus transmission. The implications of the loss of its organisational functions and its funding flows are also discussed in the 6th TIMB report.

Of course, integration holds the promise of leveraging the polio eradication programme's established infrastructure, networks and experience to support essential immunisation, disease surveillance and outbreak response. By aligning goals and strategies, countries can improve vaccine coverage, community engagement and overall population health.

This vision of integration extends beyond eradicating polio alone; it seeks to build resilient health systems that can withstand future challenges, usher in a



polio-free world and sustain healthier communities. However, without addressing the systemic challenges of inadequate funding, limited workforce capacity and geopolitical complexities, this promise will remain unfulfilled.

Again, it is mainly the business for the long-term, but integrated and mixed methods delivery will be mission-critical for the Polio Programme in 2024.

TYPE 1 VACCINE-DERIVED POLIOVIRUS: A MENACE WAITING IN THE SHADOWS

In 2023, one third of the children with polio in the world have been paralysed by type 1 vaccine-derived poliovirus. Two per cent of children with polio in the

world have been paralysed by type 1 wild poliovirus.

This should be a loud wake-up call for everyone in the world who cares about ending poliomyelitis, the disease.

Population immunity is rapidly declining. There are high vulnerabilities because of low essential immunisation coverage.

A widespread type 1 vaccine-derived poliovirus outbreak would be a catastrophe for children, for families, for governments in Africa and potentially for other parts of the world.

Responding to such a scenario would require an extraordinary,

coordinated effort. Governments, international organisations and other stakeholders would need to come together like never before. Vaccination campaigns would have to be immediate and far-reaching, with clear and resonant public health messaging. Cross-border cooperation would be paramount.

In the meantime, it is important to deal with the detections of type 1 vaccine-derived poliovirus as robustly as its wild equivalent.

The Polio Programme in Africa has largely stopped bivalent oral polio vaccination rounds, so the vulnerabilities are extremely high. A potential emergence of type 1 vaccine-derived poliovirus in Nigeria or in the Lake Chad Basin



would be like wild poliovirus restarting. It is a big risk in that area. The difficulty of stopping transmission once it gets going in Nigeria, and in the Lake Chad Basin, is a huge concern.

The Polio Programme is trying to reduce the risk of importation into that geographical zone by accelerating the response to type 1 vaccine-derived poliovirus in the Democratic Republic of the Congo (especially across the north) and in select bordering countries.

Even if there is no importation from the Democratic Republic of the Congo into the Lake Chad Basin area, the risk of emergence remains very high.

It is also deeply concerning that Madagascar has had persistent transmission for more than five years, a situation that is indefensible and deeply dangerous for the country's children and the region. In addition to Madagascar and the Democratic Republic of the Congo, this poliovirus is in Somalia, Mozambique and Malawi. It is a priority to knock it out in all these places.

DIRTY WATER AND POOR SANITATION: AN OPEN INVITATION FOR THE POLIOVIRUS TO CARRY ON INFECTING

Similarly to other enteroviruses, the poliovirus is mainly

transmitted by the faecal-oral route, with dirty water and poor sanitary environments greatly facilitating such transmission.

The IMB is still disappointed by the lack of a robust strategic approach to the provision of high-impact, low-cost health interventions in polio high-risk areas. Reports submitted to previous IMB meetings have contained lists of scattered activities with little strategic coherence.

Blaming a lack of resources, comes across as a justification for the inaction.

In August 2023, UNICEF publicly stated that eight million people in Pakistan, half of them children, continue to live in flood-affected areas with no clean water. Media reports that covered UNICEF's announcement showed children wading through polluted water to reach places where clean supplies could be accessed. In the aftermath of the floods, diseases such as diarrhoea, dysentery and dengue fever sharply increased.

A low-cost water and sanitation package was designed three years ago for polio high-risk communities in Pakistan but there was weak follow-up to implement it. It could have been mobilised through a tightly-coordinated, energetically-led special initiative.



**NOWHERE IS SAFE UNTIL
EVERYWHERE IS SAFE**

In 2022, a number of environmental detections of type 2 vaccine-derived poliovirus were made in the United Kingdom, Israel, Canada and the United States while, in Rockland County, New York, a patient with

acute flaccid paralysis was found to have this poliovirus.

Following a type 1 vaccine-derived poliovirus detection in Peru, and concerned by low vaccination levels, the Pan American Health Organization (PAHO), the early pioneer of polio eradication, has warned

that four of its Member States are at “very high-risk” for re-establishment of poliovirus circulation. A further eight are at “high-risk”.

The fight against vaccine-derived polio is nowhere near over. The stakes are as high as ever.





ROTARY
INTERNATIONAL
**END
POLIO
NOW**

RECOMMENDED ACTION

RECOMMENDED ACTION

1. **The GPEI is asked to review the IMB's list of 20 risks set out earlier in this report, add any important risk omissions from its perspective, and set out the action being taken to resolve or mitigate each in a way that facilitates monitoring.**

Not all risks are matched with a specific IMB recommendation since they will require GPEI thinking in formulating the required action.

2. **There should be an immediate, widely consultative review of the budgetary situation that is leading to prioritisation decisions that are compromising the prospects for stopping polio in 2024 and jeopardising the likelihood of a smooth journey to a polio-free world.**

It is very difficult to see how early, successful polio eradication can be achieved with the present resource levels and imbalances in the approaches of outbreak response and preventive campaigns.

3. **High priority and intensive polio programmatic activity should be concentrated on extinguishing all type 1 vaccine-derived poliovirus in the African Region.**

If any of the current polioviruses are imported into Nigeria and the Lake Chad Basin area, and establish transmission, there will be no chance

of reaching the Polio Eradication Strategy's goals in 2024 and maybe not even in the year after. It is behaving like the wild poliovirus, it should be reacted to as such before it is too late.

4. **The rapid poliovirus detection technology that has been evaluated recently should be immediately introduced into outbreak management across the whole Polio Programme.**

Recent studies of the direct detection nucleopore sequencing technique shows that it closely matches standard laboratory tests in performance terms. It hugely reduces the time to obtain results in outbreak detection. Further evaluations of field efficacy can continue during use.

5. **More polio vaccination rounds should be carried out in the final quarter of 2023 in the endemic countries than currently planned, as well as coordinating them between the two countries.**

Current plans seem to be targeting where the virus is now, allowing both countries to accumulate susceptible children in other areas, a "chasing the virus" approach. Moving into the high season both countries should be prepared to work together, to get the job done and give the poliovirus nowhere to hide. Coordinated Pakistan and Afghanistan large vaccine rounds

should be conducted in September and October 2023 and use November and December 2023 for smaller rounds to mop up.

- 6. The GPEI leadership should continue to work extremely closely with the Chief Secretaries of the Pakistan provinces and ensure immediate engagement and Polio Programme induction with any change of post-holder.**

Given the priority that the Pakistan Government has given to polio eradication, Chief Secretaries are playing a key role through administrative oversight and coordination. They align efforts across provincial departments, including health and law enforcement, and ensure the security of vaccination campaigns. Their responsibilities also include managing the allocation of financial resources, responding swiftly in crisis situations, and liaising with federal and international agencies for a cohesive approach. Their work is essential in unifying action and efficiently utilising resources in the nation's pursuit of eradicating polio. The federal and provincial Chief Secretaries all attended the July 2023 IMB meeting in person. All had a deep understanding of the polio context of their province and were actively involved in all aspects relating to performance, including taking the lead in trying to remove barriers to progress.

- 7. The GPEI should order an immediate independent external audit of the acute flaccid paralysis investigation and data gathering processes in east Afghanistan.**

All five cases of polio diagnosed in Afghanistan up to the time of the IMB meeting were reported from Nangarhar province and had a past polio vaccine history of having received between 16 and 28 doses each. It seems very implausible that

all the children should have caught polio in these circumstances and it is important to find out what is going on in the Polio Programme of one of the last two endemic countries.

- 8. The GPEI should carry out a serology study in east and south Afghanistan to enable better estimates of polio immunity levels to be made.**

Vaccination campaign monitoring data provide essential oversight of programme performance. They do not assess the cumulative effect of multiple vaccination rounds on population immunity. There are uncertainties about the precise location of communities with very low immunity levels. Also there are some doubts about the accuracy of vaccine histories (see recommendation 5). Very widespread severe malnutrition in an endemic country with use of oral vaccine is unusual circumstance.

- 9. The new Regional Director of the WHO Eastern Mediterranean Regional Office, when elected, should give immediate priority to convening the Regional Subcommittee for Polio Eradication and Outbreaks.**

The subcommittee under outgoing WHO Regional Director Dr Ahmed Al-Mandhari's leadership has been enormously influential and has built strong solidarity on polio eradication among the region's health ministers.

- 10. The Presidential Task Force on Polio Eradication in Nigeria should be reconvened.**

The Presidential Task Force was a vital component in the drive to eliminate wild poliovirus from the country. It should be reconvened and meet regularly to put the

spotlight on the subnational level, to talk about leadership and accountability, ensure that the governors are held accountable for delivering on not only vaccine-derived poliovirus eradication but also essential immunisation coverage and further developing primary care. In the last administration, this level of accountability could not be achieved.

11. **Each polio-affected and polio-vulnerable country in the African and Eastern Mediterranean Regions should be helped to prepare a polio resilience plan, listing and costing what is needed to prevent or respond effectively to polio emergences over the next five years.**

The immunity gaps, solutions and funding required to achieve resilience are not fully understood, yet are talked about constantly. It is impossible to monitor progress without absolute clarity in this matter.

12. **There should be immediate discussions with the provincial governor in south Afghanistan to seek his support for delivery of house-to-house campaigns; an invitation to the WHO Eastern Mediterranean Regional Subcommittee on Polio Eradication and Outbreaks may be a key element in these discussions.**

As in some other countries, the governor is responsible for official activities in his province and thus for the implementation of the Polio Programme.

13. **A high-level, politically-engaged, health summit should be convened to seek support for Nigeria for strengthening its primary care (including essential immunisation) system in preparation for the post-certification period.**

Nigeria's size as well as geographical and political complexity makes it a vital consequential geography not just for polio but other serious communicable diseases as well. Insight on this was seen with the "near miss" of an amplified spread of Ebola. Leaving Nigeria in its current weakened state is a dangerous option. Technical advice and donor alignment to help Nigeria with a transformation would be a very positive step.

14. **A high-level, widely representative meeting should be convened to agree how Afghanistan can be supported to develop a health system as a legacy of polio eradication.**

Despite the geopolitical contentiousness of this proposal, interruption of poliovirus transmission in the country will not be sustained in the face of the dire state of its health infrastructure.

15. **The Polio Programme, the Essential Immunisation Programme and Gavi should open up and act on the many opportunities to run more vaccination initiatives that build in polio.**

This is one important way to realise the benefits of integrated and mixed methods thinking. It needs more creativity and better inter-programme communication and is an opportunistic way of working that, over the years at IMB meetings, has been described as "low-hanging fruit."

