

A large, detailed, green-tinted microscopic image of a virus particle, showing its complex, multi-faceted surface structure, occupies the right side of the page. The background is a solid green color.

INDEPENDENT MONITORING BOARD
OF THE GLOBAL POLIO ERADICATION INITIATIVE

**EVERY
LAST VIRUS**

14

FOURTEENTH REPORT: JUNE 2017



INDEPENDENT MONITORING BOARD

OF THE GLOBAL POLIO
ERADICATION INITIATIVE



The Independent Monitoring Board provides an independent assessment of the progress being made by the Global Polio Eradication Initiative in the detection and interruption of polio transmission globally. This report follows the IMB's meeting held in London on 2 and 3 May 2017.

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INTRODUCTION

This is the 14th report produced by the Independent Monitoring Board (IMB) of the Global Polio Eradication Initiative (GPEI). Since our last report, the membership of the Board has been streamlined and reconstituted to respond to the establishment of a polio Transition Independent Monitoring Board (TIMB). In the absence of a separate monitoring function for the transition and legacy work of the GPEI, in its previous reports, the IMB had commented periodically on transition planning matters. The reconstituted IMB will now focus exclusively on objective one of the GPEI strategic plan 2013-2018: *“Stop all wild poliovirus transmission by the end of 2014 and new vaccine-derived poliovirus outbreaks within 120 days of confirmation of the first case.”* This objective became modified as a result of the Polio Oversight Board’s decision to choose a most likely scenario based on modelling to support work on financing the Polio Programme. From a range of dates for interrupting transmission globally, and in the individual endemic countries, four scenarios were constructed, ranging from “optimistic” through “intermediate” to “pessimistic.” The Board chose an “intermediate” scenario, where global transmission would be interrupted by 2016. In the “pessimistic” scenario this date was the end of 2017.



The 13th IMB Report was published in August 2016. It assessed progress on objective one (modified) and therefore looked towards the Polio Programme’s deadline of interrupting poliovirus transmission globally by the end of December 2016. The GPEI had asked that there should be no IMB meeting in the autumn of 2016. This was to enable total programmatic focus on achieving the end of year goal. This, the 14th IMB report, follows the Board’s May 2017 meeting, in London, with GPEI staff, donors, extended partners, and health ministers of the three polio endemic countries.



OVERALL PROGRESS SINCE THE LAST IMB REPORT



The IMB continues to be deeply impressed with the overall commitment, dedication, and courage of frontline staff and their leaders in each of the three endemic countries. Many crucial areas of these countries are beset by insecurity, danger, and complexity on a scale that is truly extraordinary in the delivery of public health programmes.

Based on data up to 31st May 2017, the high-level features of progress since our last report are:

- The end of December 2016 deadline for interrupting poliovirus transmission globally was not achieved.
- Nigeria has been re-designated as a polio-endemic country, only one year after being declared free of poliovirus.
- The discovery of a wild poliovirus that had been circulating in Borno State for five years undetected casts serious doubts on whether polio has been eliminated from all parts of Africa.
- The presence of the poliovirus in Borno immediately raises the strong possibility that there is circulating poliovirus in the countries surrounding Northern Nigeria- Niger, Chad, Central African Republic, and Cameroon.
- The most recent case of wild poliovirus in Pakistan was on 13th February 2017 but virus-positive environmental samples are still being found in all three of the major polio reservoirs.
- The most recent case of wild poliovirus in Afghanistan was on 21st February 2017.
- All cases of wild poliovirus in Afghanistan since April 2016 were new introductions; there has been no renewed circulation.
- Cases of wild poliovirus associated with paralysis in Pakistan and Afghanistan in 2017 have been halved compared to the same period a year ago, with cases in fewer districts and less viral diversity.
- There have been no cases of vaccine-derived poliovirus detected in the endemic countries during 2017, but two outbreaks of circulating vaccine derived poliovirus type 2 (cVDPV2) occurred in the Democratic Republic of the Congo.

PAKISTAN AND AFGHANISTAN



Pakistan and Afghanistan continue to be regarded by the Polio Programme as one epidemiological block, with poliovirus reservoirs that span the two countries. This is the correct perspective but each country's programme also has its own distinctive features.

In reviewing Pakistan, the IMB has gained the strong impression of a high-performing programme. The Polio Programme in Pakistan is continuing to benefit from exceptional political leadership, skill and commitment on the part of the Health Minister, the Prime Minister's Focal Person on Polio Eradication, and the Provincial Secretaries.

An important and recent innovation in programme governance has been the engagement of the divisional level – below that of the province. Over the last year, this has substantially improved. Divisional level taskforces run by divisional commissioners are in operation. Since January 2017, in the run-up to the election, more of these people have been moved around. The Health Minister of Pakistan strongly reassured the IMB that the Polio Programme would not suffer as a result of pre-, and post-electoral changes of leadership and personnel. However, it is absolutely vital that Polio Programme governance remains stable preceding and following a major election. This means attending to detail: how to make sure that incoming officials are briefed, that they are mentored in their complex new jobs, and that they are able to seamlessly pick up the polio baton at a crucial time for Pakistan.



PAKISTAN AND AFGHANISTAN

The impression of strong programme performance seems to be backed up by data. Pakistan has had two cases of paralytic polio associated with wild poliovirus in 2017. Both were outside the endemic reservoirs. The cases have been subject to very aggressive response. However, there are still extensive environmental positive samples in the Quetta Block and Killa Abdullah. In several locations, this has been happening consistently for the past two years – for example in Shaheen Town, Peshawar, and in Surpal, Quetta. There are also recurrent positives in Karachi. However, it has to be said that the current scale of environmental sampling is unprecedented. There are now 53 active surveillance sites in Pakistan. This provides a higher resolution focus on virus circulation than ever before. India only began environmental sampling at the very end of its eradication effort. In India,



the environment continued to be poliovirus-positive for several months after the last case. There can be no room for complacency about the positive environmental samples in Pakistan but, two years ago, the presence of these samples would have sparked cases of paralytic polio. They have not this time around, at least as has been identified so far.

Sero-prevalence data are the ultimate arbiter of protection. Results of studies since the last IMB report show high levels of population protection in the parts of every province tested, except for Quetta Block. Here immunity is too low. Experience from India is that multiple doses of vaccine (seven or more) are needed in high population density areas, and experience from Pakistan and Nigeria suggests that inactivated polio vaccine (IPV) can have an important role boosting immunity in these locations.

In the Quetta Block, the quality of the programme is still well below peak performance. It contains the highest number of susceptible children. The Pakistan Polio Programme seems to be having the greatest struggle in the Quetta Block. There are many reasons for this. For example: it is hard to get female community workers, and when they are appointed, there is high turnover; there is a high number of refusals; there is constant large-scale population movement; Baluchistan, as a whole, gets least resources and has weaker public services; the extra workload from the introduction of inactivated polio vaccine (IPV) is taking its toll; a rather conservative culture prevails making transformative change very difficult to achieve.

PAKISTAN AND AFGHANISTAN

Taking an overview of the polio work in Pakistan, a striking observation is the number of children still missed during immunisation rounds. Particularly, large numbers are missed even after subsequent catch-up activities have been completed. This must become a key metric in the fight against polio. Looking at the Polio Programme's performance in the last three seasons (covering 15 immunisation rounds) is revealing. In Pakistan, even after attempts to go back to communities to find the children who had been missed, the approximate numbers unvaccinated were: 767,000 (low season 2016); 760,000 (high season 2016); 858,000 (low season 2017).

Fortunately, these represent very small percentages of the huge numbers of children successfully vaccinated in Pakistan in recent times. However, at this stage of the eradication effort, the *absolute numbers*, particularly when clustered in communities, are much more important than the percentages. In such large populations of vulnerable children, polioviruses have a much higher chance of survival. It is of concern that the highest number of "still missed" children is in the Tier 1 (i.e. highest risk districts).

The Polio Programme now looks in detail at the data returned from immunisation rounds as: "*Child not available.*" Distinctions are made between children who, at the time of the vaccinators' visit, were not available because either they were at school in the immediate locality (NA1), or in the wider district (NA2), or much further afield (NA3). There are three practical implications of these data. Firstly, the numbers are currently too large to give complete



confidence that poliovirus transmission will be stopped. Secondly, the first two groups of "not available" children can be reached if good and trusted local knowledge is used to identify a "return time" for the child. A visit by a vaccinator can then coincide with the child's availability. Thirdly, the large number of children who are far afield in another part of Pakistan or Afghanistan represent the greatest challenge today and it is a problem crying out for innovative solutions.

We return to the strategic and operational implications of population movement in the conclusions of this report.

PAKISTAN AND AFGHANISTAN

The Polio Programme in Afghanistan continues to operate with areas of high insecurity. An Emergency Operations Centre (EOC) is now firmly established and is leading delivery. Surveillance and immunisation performance is getting better, but gaps remain.

The recent improvement in access, particularly in Kunduz, is positive, as is the fall in numbers of inaccessible children: from 300,000 to less than 100,000. The security situation remains fragile and uncertain, and the Polio Programme in Afghanistan must be able to take advantage of every window of accessibility.

Surveillance indicators for the country look positive. However, there remains a risk of localised poor performance being masked by good performance in nearby areas – notably in Kandahar, Jawzjan and Badakhshan, where “silent” districts are a cause for concern. Expansion of environmental sampling to new areas – particularly Kunduz – may be an important new resource. However, the continued absence of environmental sampling in Sheegal and Patika is an adverse feature of the surveillance programme. Admittedly, the logistics of sampling is difficult there but it argues for more innovation.

The overall picture of immunisation activity in Afghanistan suggests a progressive and incremental performance improvement. The Immunisation Communication Network is also being effective in reaching those children missed initially in campaigns – with demonstrable success in Helmand, Kandahar and Kabul.

Cross border working has been a historical weakness of the programme. The IMB has heard evidence that this has improved, with a genuine desire from the staff on both sides to work across this divide. Collaboration mechanisms have been established and are working. The occurrence of regular national programme coordination meetings is a good sign. Information is flowing between teams. Now is the time to capitalise on this collegiality, and move to a stronger system of accountability, with clearer measures of the quality of cross-border working.



NIGERIA, LAKE CHAD, AND SURROUNDING COUNTRIES



The last time the IMB met, Nigeria had just been declared a polio-free country, and removed from the endemic list. The emergence of four new cases of polio shortly afterwards was an unwelcome turn of events. The source of the outbreak was a poliovirus that had been circulating unnoticed in Borno State for five years. The perspective of the IMB is that neither the Nigeria Polio Programme, nor the broader GPEI, have internalised the key lesson of Borno: there are blind spots in Nigeria, the Lake Chad Region, and elsewhere in Africa where the poliovirus may be lurking, undetected. This represents a major threat to global eradication.

The response to the outbreak was strong, but was still constrained by high levels of inaccessibility. The GPEI has described the population as being “trapped.” The numbers affected are estimated as between three and five million. Military action is freeing some of this number but dealing effectively with security and access remain central to building resilience against renewed poliovirus circulation in Nigeria. New approaches to reaching these communities are needed. One IMB source has described travelling down a road in an endemic area and counting 15 military checkpoints, but seeing no vaccination stations. Being unable to reach nearly half the population of the area is a crucial barrier to ending the outbreak and to documenting that it has been stopped.

Active political commitment to the programme in Nigeria appears to have waned somewhat over the last couple of years, perhaps with the perception that polio had gone. The

IMB has observed that, flushed with the success of not seeing a poliovirus for some time, the focus of the Polio Programme in Nigeria may have turned too swiftly toward polio transition leadership, at the expense of continuing the work to ensure safe passage to certification of eradication. The last IMB report highlighted the need to adopt a resilience mind-set in the Nigerian programme. The Nigeria Polio Programme must become obsessive in trying to find every last weakness in its defenses that could let polio back in.

The President of Nigeria had agreed, in January 2016, to reconstitute an expanded Presidential Task Force on Polio, to include the 36 state governors. The engagement of Governors and, through them, the Local Government Area chairmen, had originally been secured in a meeting with Mr. Bill Gates in 2009. It had been further cemented at the time of the formal Abuja Commitment of Nigeria’s state Governors in 2011. The attendant establishment of polio leadership awards by the Bill and Melinda Gates Foundation at that time also reinforced the political commitment to polio eradication. A further move was made to rejuvenate the Abuja Commitment when the President and State Governors made another public declaration in January 2016. However, the Presidential Task Force on Polio has not been meeting regularly since then.

At first glance, the surveillance data for North East Nigeria over the last year has looked very reassuring. However, the recent surveillance review conducted by the Polio Programme has identified systemic problems with the national surveillance system. This requires further

NIGERIA, LAKE CHAD, AND SURROUNDING COUNTRIES

investigation, and potentially strong remedial action. Suspicious patterns of reporting suggest falsification of results. There are reports, too, that surveillance officers in some of the southern states are not being paid. There are continuing concerns that independent monitoring here may be being tampered with. It is not clear what is being done to ensure that there is independent verification of accuracy of surveillance data.

Concerns about a further circulating poliovirus discovery are not restricted to Nigeria. The complex politics and geography of the region around Lake Chad presents profound challenges. Several countries' borders come together at this point, with unpredictable population flows, limited government services, and limited government health capacity



across them. Those familiar with the region have observed: "There really are no borders." Islands in Lake Chad are hard to reach. Recent conflict in Northern Nigeria between the Nigerian military and Boko Haram, has led to massive population displacement - an estimated 2.5 million people moving from their homes - many either into temporary camps in Nigeria or over borders into Niger, Cameroon, or Chad. This humanitarian crisis, putting the Lake Chad region in flux, has the typical ingredients of violence, infectious disease transmission, poor sanitation, and under-nutrition. It adds a further dimension to the risks of polio resurging in the region. The Polio Programme does not have sufficient information on what is happening. Whilst immunisation activity took place in all the countries surrounding Nigeria after the recent outbreak, the situation needs to be looked at afresh. There were already reports of surveillance getting scaled back in other parts of Africa because of the process of polio transition. This might be justifiable if surveillance were of high quality, but often it is not.

The level of risk and importance needs to be felt at the highest levels of government in these surrounding states, and the programme needs to take exceptional steps to ensure that this happens, including direct senior representation to heads of state and through the African Union.

At this point, the IMB judges that the wider lessons from the Borno outbreak have not been sufficiently internalised by the Polio Programme, both in the country and by GPEI leadership.



OVERVIEW

The number of cases of wild poliovirus in 2017 so far (by 31st May 2017) stands at five. This compares with 16 by the same time in 2016, and again reaches the lowest tally since records began. That it is more than 60 days since the last case of paralytic polio due to wild poliovirus anywhere in the world is another first for the GPEI. The genetic diversity of the polioviruses tested has also reached an all-time low. This suggests a drift towards species extinction.

These are positive signs but they are not enough for the IMB nor the Polio Programme to be sure that the last transmission of poliovirus in the world will happen in 2017. As described earlier in this Report, this was the “pessimistic” date for eradication but now it appears to be optimistic. More work is needed. Even after the last apparent case in Pakistan and Afghanistan, the two countries will have to sort out the remaining imperfections in their programmes if they are to build resilience. The lessons from Nigeria must be taken to heart if the spectacle of countries yoyo-ing between endemic and non-endemic status is to be avoided.

The right blend of optimism and realism

The number of polio cases confirmed is one proxy for the true figure of wild poliovirus infections actually occurring. Textbook accounts suggest that there are 200 infections for every symptomatic case of polio. Modern thinking is that, in an environment of high immunisation rates, the figure might be 1000 or even higher. It is important that this is built into the thinking of those leading the Polio Programme and is used extensively in communications with team leaders and staff at the operational level. The difference between the identified infections and the hidden infections is not an esoteric distinction. It is of essential importance to eradicating the disease. Sometimes environmental positives are thought of as “not real polio” or somehow reflecting circulation within the environment - rather than as a signal of ongoing transmission between people, albeit without paralysis.

Over the last two years, the GPEI's communications have repeatedly emphasized “the lowest number of cases in history.” There is a danger of enabling a widespread belief that these low numbers are all that is left of polio. For example, the scale of endeavour and commitment necessary to finish the job by wiping out the virus circulation associated with the 37 cases of paralytic polio in 2016 is very different from stopping 37,000 infections. Multiplying the number of detected cases by a thousand is a more realistic way of pitching programmes and plans and this should be the mindset and the communication tone that drives the Polio Programme's work for the rest of this year.



MISSING CHILDREN IN MOBILE POPULATIONS

The need for a transformative solution

The Polio Program in Pakistan is doing what it has been built to do: reaching large numbers of missed children, closing immunity gaps, strengthening surveillance systems. It is delivering its programme near to peak performance. But it is not there yet. Another big step is needed to reach the pinnacle at which polio transmission is stopped for good. It is vital that the commitment of national government, provincial government, and district officials remains at its current level: high-energy, laser-focused, and uncompromising in its goal. Victory is in Pakistan's own hands.

The numbers of children missed in polio vaccination rounds remains too high for comfort. If it does not initiate a new transmission immediately, it could emerge as an unwelcome outbreak on the path to eradication. The single biggest issue confronting the Polio Programme in Pakistan and Afghanistan is how to effectively reach the large numbers of children who are on the move with their families.

The solution to this problem has a number of aspects. Firstly, there is a large group of children who are temporarily absent from their home when the immunisation team visits. They may be simply at school or away for a few days or weeks – say, at a wedding elsewhere in the union council area or the district. Follow-up visits are still not finding enough of such children. It is essential that good local knowledge be accessed to enable a visit to be precisely matched to child's return to their home. This granularity of information and understanding is essential. It



means involving local people, taking an enhanced approach to microplanning, and establishing flexible arrangements for visits. This is already happening with the best polio teams, but best practice is not being systematically applied everywhere, nor is it sufficiently visible in the Polio Programme. It needs to be stated clearly and all teams aligned to perform in this way.

Secondly, there are known nomadic groups. It is essential that the Polio Programme continue to reach them. Some of their movement patterns are consistent but not completely predictable. The use of health camps, providing a range of public health services, has been shown to be a good way of engaging them. It is important that this approach is extended.



MISSING CHILDREN IN MOBILE POPULATIONS



Thirdly, the greatest conundrum is how to reach the much larger numbers of mobile children who are not part of nomadic communities. The Polio Programme calls these children: "Guests." This term signifies that they travel with their own family regularly from one dwelling to another staying with wider family or friends for variable periods of time. They make up some 90% of what the Polio Programme has been calling the "high-risk mobile populations" of children. In essence, their pattern of residence is distributed. Long distances are travelled between bases. There are often intricate social connections between sub-populations so that unimmunised children can cluster in a densely populated area. The poorest of the poor are contained within these mobile populations. The risks of poliovirus spread are high.

A major breakthrough is needed to address the problem that mass population mobility causes for the Polio Programme. Of course, part of the solution is the long established practice of vaccinating children at transit points and crossings. This is particularly important in places where large numbers of people flow through. However, this approach, whilst necessary and important, is not sufficient to produce major transformational change. It will not vaccinate hundreds of thousands of children for the number of times required to sustain adequate immunity levels.

The best performing polio teams are innovating by "reframing" the problem of how to reach children in mobile families. Instead of defining the problem as how to find children while they are on the move, the problem

is defined as how to organise immunisation to reach children where they leave from and where they land, even if that "landing" is only a temporary stay of a few days in a relative's house. This is not as easy as it sounds. It requires a different and much more flexible approach to the process of microplanning, immunisation activities, and the leadership of teams. In short, actions tailored to reach the large and highly mobile population of children moving with their families across Pakistan, into Afghanistan, and back again, has to be completely integrated into all aspects of the performance of the Polio Programme at local level. It also requires accessing detailed local knowledge, soft intelligence and in-depth social data and support from communities. If the right data are not available, they must be collected. If there is no one to produce clear incisive analyses of the data, then the country programmes should seek the help of the GPEI globally to boost analytical capacity. And it requires finding new and imaginative solutions devised by local people, so-called "microinnovation." This fundamentally different approach is happening in some places but it has to be strategically scaled up by the leadership of the GPEI. The gold standard is that every child should be on someone's microplan. For these programmes to reach the travelling communities, it will be critical, wherever possible, to enlist community leaders and prominent individuals and organisations in the immunisation effort.

PROGRAMME DELIVERY IN AFGHANISTAN

The IMB has reviewed information gathered by the Polio Programme from recent cases of paralytic polio and positive environmental samples. The purpose of so doing was to gain insight from the granularity of the findings into the systemic nature of operational problems. The investigation of such events appears to be very thorough and detailed. The documentation generated is very extensive and often runs to 30 pages. However, the weaknesses in programme performance revealed from the case investigation seem quite striking; they show situations when the very basics are not being delivered well.

One case of paralytic polio in Paktika Province, southeastern Afghanistan illustrates these bigger points. The report of an investigation of the case overseen by the National Rapid Response Team *inter alia* made the following judgements:

- Child had received no doses of oral polio vaccine either in routine immunisation or campaigns.
- The coordination mechanism between the polio team, partners, and the NGO for both campaign management and routine immunisation is weak.
- Basic Package of Health Services implementing-NGO is not fully engaged in the polio programme.
- No evidence to suggest that provincial pre-campaign coordination had ever been conducted.
- The quality of AFP visits was “not up to the mark.”
- A displaced population camp had not been included in the microplan and missed for two years.



PROGRAMME DELIVERY IN AFGHANISTAN

There are those who will say that cases, looked at in this detail, will inevitably reveal such findings. However, this is to become inured to the performance weaknesses that it points to.

In its last report, the IMB recommended that the role of non-governmental organisations (NGOs) in polio eradication in Afghanistan should be strengthened. We returned to the subject in our recent meeting with the GPEI, with the polio donors and extended partners, and with the Afghanistan Minister of Health. We encountered a degree of “push back” from the Polio Programme in Afghanistan, with a clear view that no further action is required. However, nearly all of the primary healthcare services, including routine immunisation, in Afghanistan are provided by a designated NGO, usually a local one, for each province. They are given funds to provide these services through the World Bank to which various donors contribute. The NGOs are not heavily involved in the Polio Programme in the country. The WHO and UNICEF largely deliver this as a parallel vertical programme. It is still the IMB view that the Afghanistan-based NGOs could be more engaged in microplanning and immunisation rounds. In order to best integrate them into the Polio Programme, in addition to the NGO’s nominee being represented on the national and

provincial Emergency Operations Centres, there would be benefit in appointing a full-time designated NGO coordinator for polio eradication in Afghanistan. In addition, the IMB is disappointed that the Afghanistan Polio Programme could not make progress on extending the role of female vaccinators, given that this policy has been so successful in Pakistan. The IMB also remains concerned about lack of data on performance in areas controlled by non-government entities.



BOOSTING ROUTINE IMMUNISATION

The poor state of routine immunisation in the Pakistan and Afghanistan polio reservoirs

A seasoned observer of public health services in Pakistan told the IMB: "If the country had even a half-competent routine immunisation programme in its reservoirs, polio would be long gone."

The reality is that, despite some recent improvements, key areas of Pakistan have some of the worst levels of routine vaccine coverage in the world. Most of the terms converted to acronyms and used by staff in the Polio Programme and the wider public health world are seldom spoken in full. An example is the acronym "SIA." This stands for: "Supplementary Immunisation Activities." This is the mainstay of the Polio Programme. SIAs cost hundreds of million dollars a year. No one ever thinks

about the meaning of the words any more. Yet, the word "Supplementary" is there for a reason. It is meant to make clear that the immunisation activities are supplementary to routine immunisation. Routine immunisation should be the way that the core immunity of a population is built up over time. The supplementation is meant to fill in the gaps that routine was missing.

In reality, in key polio-affected areas of the world, the gaps became chasms and the original rationale was forgotten. In effect, the supplementary immunisation "cart" was put before the routine immunisation "horse."

This is not only a matter for polio transition planning. An immediate and major boost to the quality of routine immunisation in the polio reservoirs could be the decisive blow to the poliovirus.





NO MORE SURPRISES

The Programme's competence in surveillance

The quality of the system of surveillance in parts of all three endemic countries is not consistently high enough to be sure that every virus is being detected. The presence of a poliovirus that had been circulating undetected in Borno, northern Nigeria, for five years illustrates this point; indeed, it had the dramatic effect of removing from Nigeria its newly minted non-endemic status and dampening the celebratory media headlines of a polio-free Africa.

Whilst, available indicators point to a strong and sensitive polio surveillance system across Nigeria, these data are potentially misleading. In Borno, incorrect assignment of geographic reporting of acute flaccid paralysis (AFP) cases concealed poor reporting from inaccessible areas. It masked gaps in polio surveillance across most of the state. The Nigeria programme reportedly collects stools from nearly all AFP cases within 14 days and almost never reports a case with a missing stool (0.07% in 2016). This high level of performance has been observed for several years across the majority of Local Government Areas. This trend is unprecedented for polio surveillance globally, and it is improbable that any system could sustain this level for an extended period of time. Added to the recent field surveillance reviews that found misreported dates of paralysis onset for some AFP cases, these data patterns indicate systemic data quality problems in Nigeria. Thus, although Nigeria has a large AFP surveillance infrastructure, and the largest number of AFP reports

amongst the endemic countries, there have to be concerns about the sensitivity and validity of surveillance in the country.

Nigeria implemented a case verification system in 2015 and, in 2016, over 16,800 AFP cases were verified. Despite the high cost of this system, case verification data are of poor quality and not being used to their full potential. Furthermore, these data failed to flag inconsistencies and potential data manipulation in AFP data identified in recent data reviews.


Whilst it is likely that cases would be quickly detected in most parts of Nigeria other than in parts of Borno, the IMB does not have full confidence in the current system of surveillance in Nigeria. It is imperative to urgently make surveillance staff accountable for their actions.

The Borno poliovirus was not the only example of a nasty surprise for the Polio Programme. Earlier, in March and April 2016, three cases of paralytic polio emerged in the Bannu area of Pakistan. The cases occurred over a short period of time and were of multiple genetic lineages, pointing to a serious immunity gap. The importance of this occurrence was that it was largely unexpected. Yet, the investigation of the cases, showed that there were multiple reasons why this should not have been a surprise.





NO MORE SURPRISES



Over the last six months, the IMB has heard those in the Polio Programme asking each other: “Could there be another Borno?” and “Could there be another Bannu?” These are the very questions that the Polio Programme should be asking itself. However, it is not clear that this “upstream” state of mind is widespread. It needs to be. Further progress towards eradication will not be made unless the Polio Programme fully internalises the lessons of Borno and Bannu. This means making maximum use of the data that are available, but using them to ask searching and self-critical questions. It is an irony that it is such a struggle to raise surveillance from its “poor cousin” status in relation to immunisation activities when the whole world will depend on its veracity in the years running up to certification. Closely linked to this is the need for rigorous assessment before outbreaks of polio transmission are declared over. A major point of the Borno outbreak is that you cannot declare that an area is polio free if you don’t have access to it.

In Pakistan, acute flaccid paralysis (AFP) surveillance has improved across all provinces. However, there are persistent pockets of poor performance. Environmental surveillance has detected wild poliovirus transmission in the absence of infected cases of AFP, particularly in Punjab. Pakistan needs to further improve AFP surveillance in and around known pockets of wild poliovirus transmission including in districts that are not in the highest priority group. In Afghanistan, AFP surveillance has improved over the past few years. Stool adequacy, for surveillance purposes, is high and is now better in the Southern region.

There is good corroboration of isolation of wild poliovirus between environmental and AFP surveillance. However, a large number of districts in Afghanistan have small populations (398 districts with an average under-15 years population of 51,000). By definition, they have low expected background number of non-polio AFP cases. This means that it takes time to understand how well the system is performing. Also many districts throughout the country have degrees of inaccessibility which require special approaches to case detection.

However, because wild poliovirus transmission straddles the border between Afghanistan and Pakistan, there is high likelihood of pockets of weak AFP surveillance despite the generally high AFP surveillance performance indicators.

The findings of surveillance reviews in Nigeria, Pakistan, and Afghanistan highlight the need for systematic improvement in AFP surveillance. National and subnational gaps in polio surveillance must be addressed to prepare for polio-free certification. The need for systematic improvement in AFP surveillance spans beyond the three endemic countries. Insecure and inaccessible areas limit the comprehensiveness of surveillance systems; subpopulations that could sustain transmission might not be captured by surveillance systems; country-level indicators may mask poor performance at subnational levels; and AFP surveillance indicators may be vulnerable to data manipulation.

NO MORE SURPRISES

Weaknesses in resilience in Nigeria and surrounding countries

The IMB is concerned about the situation in Nigeria on a number of fronts. Firstly, this generally strong programme does not seem to have a full understanding of the status of the large populations in areas of inaccessibility in northern Nigeria. The size of the population continuing to be “trapped” due to insecurity even after military action to free communities is not known. IMB sources also report that some of the camps for internally displaced people in northern Nigeria are in very poor sanitary condition. No one can be sure what is going on in this part of Nigeria. It is entirely possible that the poliovirus is present or even circulating in the camps or within remaining trapped populations. There is also a need for a strong focus on the 15 highest risk Local Government Areas that surround Borno.

Secondly, the Presidential Task Force has only met once since 2015 and that was in the run-up to the IMB meeting in April 2017 with the Vice-President in the chair. Despite many statements of resolve, the IMB is concerned that the level of active political commitment and alignment from federal, to state, to local level, is not commensurate with the ongoing risks of polio re-emerging in the country. Furthermore an election is coming in 2019. In the past, elections in Nigeria have proved capable of disrupting work on polio eradication.

Thirdly, in parts of southern Nigeria, it seems that surveillance officers have not been paid. This means that surveillance data from these areas cannot be relied upon. It also implies that the importance of surveillance is not recognised at the highest level in the country.

Fourthly, the presence of the circulating poliovirus in Borno means that another outbreak could occur in the Lake Chad region or in any of the surrounding countries at any moment. Other countries are not as well equipped as Nigeria to deal with re-established circulation. The same quality of pervasive response may not be achieved or achievable.

Fifthly, the implications of Borno for other parts of Africa, notably the Democratic Republic of the Congo, do not appear to have been fully grasped. There are rumours that surveillance efforts, rather than being scaled up in areas with limited accessibility, may actually be getting reduced.

The IMB is deeply concerned that there was no early high-level action to engage the heads of state in the region to tell them how poor access and performance actually is, and to advise them of the grave danger of polio reintroduction in their countries. They should have been told of the importance of their personal leadership. It seems that late in the day such action is being taken but the IMB was told at its meeting, about a letter that had been drafted at WHO but “never saw the light of day.”

CONCLUSIONS AND RECOMMEN- DATIONS

The Polio Programme has reached a level of performance where there is room for optimism that 2017 will be the year when poliovirus transmission globally is permanently interrupted. Nigeria has a strong programme that pioneered the use of an Emergency Operations Centre to integrate a diverse range of partners to drive up the level of performance. Pakistan has benefitted from the exceptional leadership of the Health Minister and the Prime Minister's Focal Person on Polio Eradication. The transformation of the Polio Programme in that country from being judged "a disaster" in a previous IMB report is quite remarkable. The Afghanistan Programme has done well to achieve what it has despite serious problems of access due to conflict.

All this is commendable, but the Polio Programme in the three endemic countries and globally is not there yet. The optimism must be tempered with a realism about the risks and challenges that remain. Only if the appropriate balance is struck can the programme succeed soon.

If the narrative and statistical analysis in this IMB Report is read carefully, five major priorities for action jump out:

- An innovative and transformational solution must be found to vaccinate the large numbers of so-called "Guest children" who are within the large high-risk mobile population in Pakistan; continuing with the current approach will not reduce the numbers of "still missed" children from hundreds of thousands to hundreds in less than six months.

- A dramatic and immediate turnaround is needed in the low level of routine immunisation coverage in the polio reservoirs in Pakistan and Afghanistan; the current position is a stain on the Programme's record of improved performance.
- The Nigeria Programme has not yet realised that it must become an exemplar in how to operate as a high resilience enterprise; all its efforts should be directed to strengthening the defenses against any poliovirus breaking through.
- The whole region around northern Nigeria, Lake Chad and surrounding countries has become a red zone in which there is a high-risk of the re-emergence of circulating poliovirus; leaders at the highest political level should be on full alert and completely engaged.
- The quality and integrity of surveillance data across the Polio Programme, particularly in northern Nigeria and other parts of Africa, which may harbour another unwelcome, long-unrecognised outbreak, is not what it should be. This is compromising the ability of the Polio Programme to be sure that transmission has ended.

These are major problems threatening the successful completion of polio eradication. They are problems awaiting solutions. The tried and trusted methods that are being used are still necessary but matching these problems with solutions that bring transformation is the missing ingredient.



CONCLUSIONS AND RECOMMEN- DATIONS



A note on IMB recommendations

This is the 14th report of the IMB. Experience shows that the IMB's value to the programme has come in several strands, not purely from its recommendations. In particular, it has also come from: the process of national and programme leaders preparing for IMB meetings and accounting publicly for their records and their actions; increased focus being brought to bear on a particularly important issue, as a result of IMB observations; the spread of best practice between country programs as a result of IMB (and other) analyses; and, stimulation of creative thought and novel solutions. The recommendations are therefore just one part of the IMB process, and should be considered alongside the meeting and report, not alone.

Historically, the majority of IMB recommendations have been accepted and acted upon to good effect. But this note is made because the Polio Programme has sometimes, with too little thought, left unaddressed the underlying problem prompting a recommendation. Each recommendation in this Report is there for an important reason. If it does not hit the nail on the head, or is problematic in some way, it should not be rejected wholesale. The spirit and intention of that recommendation must be understood – through further discussion with the IMB as needed – and be acted upon. This report describes a series of complex issues, to which there are no simple solutions. The IMB is recommending important actions that will help but we call on the GPEI and the country programmes to “think outside the box” and bring powerful ideas, creativity, and ingenuity to the table.

Recommendations

1. There are concerns about the quality, reliability, capacity and authenticity of surveillance data in areas across the whole Polio Programme.

WE RECOMMEND that the reviews of surveillance currently being conducted by the GPEI should be revisited to ensure that they address: action to identify and close surveillance gaps at the national and subnational levels; plans for special case detection initiatives in all areas of inaccessibility; prompt and precise identification of areas (both national and subnational) where data quality is weak; clear courses of action for identification and resolution of data manipulation. A single consolidated report reviewing surveillance should be published as a matter of urgency. This will make the issues much more transparent and mean that the GPEI can rapidly improve surveillance in blind spots, including through direct outreach to Heads of State. The IMB will ask for a special report on polio surveillance at its next meeting.

2. The number of children “not available” for vaccination in Pakistan whilst away from home elsewhere in the union council or district is far too high.

WE RECOMMEND that the Polio Programme in Pakistan should urgently review and enhance local microplanning, as well as methods of harvesting highly granular local knowledge on individual

CONCLUSIONS AND RECOMMEN- DATIONS

children's whereabouts. Experience of the best performing local teams should also be distilled. This should all be used to create a best practice template to match vaccinator visits with the timing of "return home" children who were away in the local or district environs.

3. The number of so-called "Guest children" regularly moving with their families from place to place across Pakistan and Afghanistan is huge. The numbers amongst them who do not receive the polio vaccine even after catch-up immunisation activities is in the hundreds of thousands.

WE RECOMMEND a paradigm shift in approach to this population that puts major emphasis on finding and vaccinating children in their residential bases, no matter how short their stay is. The Pakistan and Afghanistan programmes should establish a new strategy to address this issue based on integrating mobile populations into the whole process of microplanning and local programme management, and enlisting community leadership in vaccination efforts.

4. All available sources of data show that the levels of routine immunisation in the polio-vulnerable areas of Pakistan and Afghanistan are very poor, despite substantial investments by Gavi and other groups.

WE RECOMMEND that a special taskforce be assembled to bring about a major transformation in performance within the next six months.

5. The NGOs should be more involved in the Polio Programme in Afghanistan. The WHO and UNICEF largely deliver this as a parallel vertical programme. The Afghanistan-based NGOs could be more engaged in microplanning and immunisation rounds.

WE RECOMMEND that a post of NGO Polio Coordinator be created in Afghanistan.

6. Conflict in northern Nigeria is driving massive population displacement into temporary camps in Nigeria or over borders into Niger, Cameroon, or Chad. Remaining inaccessibility in Borno, and a serious lack of resilience to polio in the largely border-free areas and countries surrounding Nigeria, is creating a dangerous situation that could easily be concealing polioviruses of which the Polio Programme is unaware.

WE RECOMMEND that the global leadership of the GPEI strongly engage with the Heads of State of these countries to agree a coordinated strategic action plan.

7. The Presidential Task Force on Polio in Nigeria has met infrequently over the last few years. It is vital that political leadership and coordination is strong if the country is going to regain its polio non-endemic status ahead of the other two endemic countries.

WE RECOMMEND that the Presidential Taskforce meet on a regular basis, under the chairmanship of Nigeria's Vice-President when the President is not available.



CONCLUSIONS AND RECOMMEN- DATIONS



- 8.** The determination of when an outbreak of poliovirus is closed is currently made within the Polio Programme. As the prospect of interrupting global transmission grows closer, the validity of judgements about risks of ongoing poliovirus circulation become crucial.

WE RECOMMEND that Regional Certification Committees should henceforth formally sign off action following an outbreak as satisfactorily completed.

- 9.** In many of our previous reports, we have emphasised the importance of social data. Their use is essential to enabling the root causes of problems to be fully understood and in targeting effective action where the behaviour and attitudes of individuals and communities is at the heart of delivering a successful programme. There has been a noticeable fall off in the extent to which social data have been cited in discussions between the IMB and the GPEI.

WE RECOMMEND that the use of social data within the Polio Programme is formally reviewed and new guidance is formulated and consistently used to maximise its value.

- 10.** The Polio Programme has always lacked a way of fostering regular opportunities for groups of people to come up with innovations in process, in management, in communication, and in technology.

WE RECOMMEND that a system of innovation hubs should be established in Pakistan and Afghanistan. They should seek the input of local people, individuals entirely outside the public health field, and young people who are not used to working in formal organisational structures. They should be directed initially to find innovative solutions to the problems described in this report.

An IMB source, a very dedicated frontline worker in one of the endemic countries, told us: "My job is to make sure that as long as the sun shines, and as long as the rivers run, poliovirus will never paralyze another child." We could not have put it better. The hunt for every last virus must be unrelenting.

DATA INSIGHTS

The poliovirus is in core reservoirs

Area	WPV Cases			WPV Environmental Samples		
	Low Season 2016	High Season 2016	Low Season 2017	Low Season 2016	High Season 2016	Low Season 2017
Kandahar & Helmand to Quetta corridor	4	0	3	3	20	21
Nangarhar & Jalalabad to Peshawar Valley corridor	3	0	0	5	5	7
Paktika to South Waziristan Corridor	0	9	0	0	0	0
Karachi	1	0	0	8	1	11
Northern Sindh	3	0	0	5	1	1
Other	10	6	3	6	8	8
Total	21	15	6	27	35	48

High season is May to September, Low season is October to April.

Source: World Health Organization

Inaccessible children

Area	Low Season 2016	High Season 2016	Low Season 2017
Kandahar & Helmand to Quetta corridor	14592	32945	33001
Nangarhar & Jalalabad to Peshawar Valley corridor	28543	21422	13343
Paktika to South Waziristan Corridor	6500	18827	29051
Karachi	0	0	0
Northern Sindh	0	0	0
Other	146865	286560	153897
Total	196500	359754	229292

High season is May to September, Low season is October to April.

Source: World Health Organization

DATA INSIGHTS

Missed children even after catch-up Pakistan

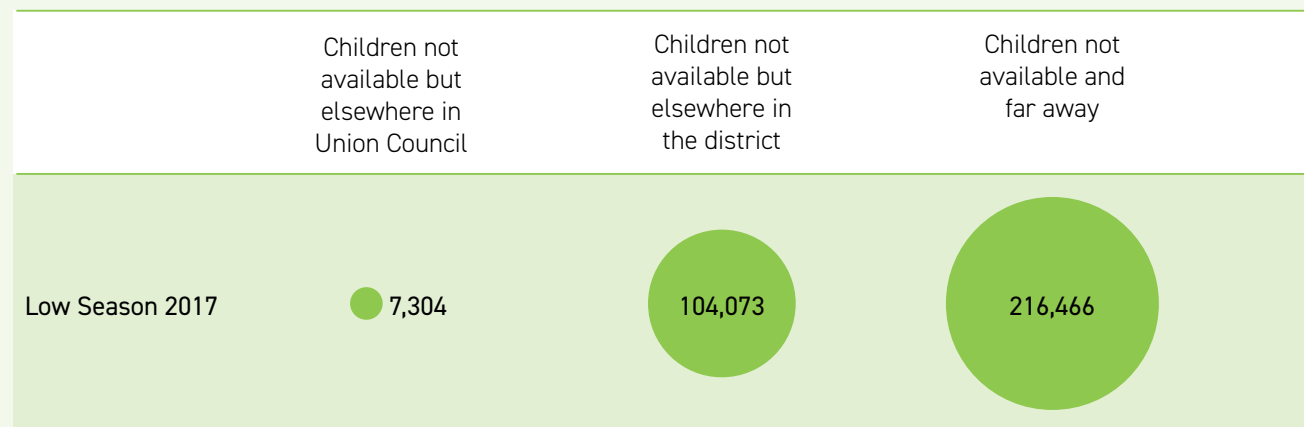
Immunisation Round	Missed Children
Low Season -2016	767,072
December '15	110,586
January '16	105,615
February '16	131,737
March '16	123,969
April '16	155,834
May '16	139,331
High Season -2016	760,219
July '16	91,156
August '16	165,042
September '16	184,518
October '16	141,044
November '16	178,459
Low Season -2017	858,393
December '16	222,652
January '17	197,256
February '17	214,816
April '17	223,669
Total	2,385,684

DATA INSIGHTS

Immunisation uptake in polio reservoirs

High Risk Area	Percentage given Pentavalent vaccine	Percentage given Inactivated Polio Vaccine
Killa Abdullah	9%	7%
Khyber	26%	22%
Peshawar Zone 1 & 2	61%	57%
Peshawar Zone 3 & 4	55%	52%
Quetta	23%	17%
Pishin	6%	10%
Karachi Zone 1	40%	34%
Karachi Zone 2	59%	50%
Karachi Zone 3	32%	22%
Karachi Zone 4	59%	47%

New detail on “not available” children showing big numbers generally but biggest in those travelling furthest

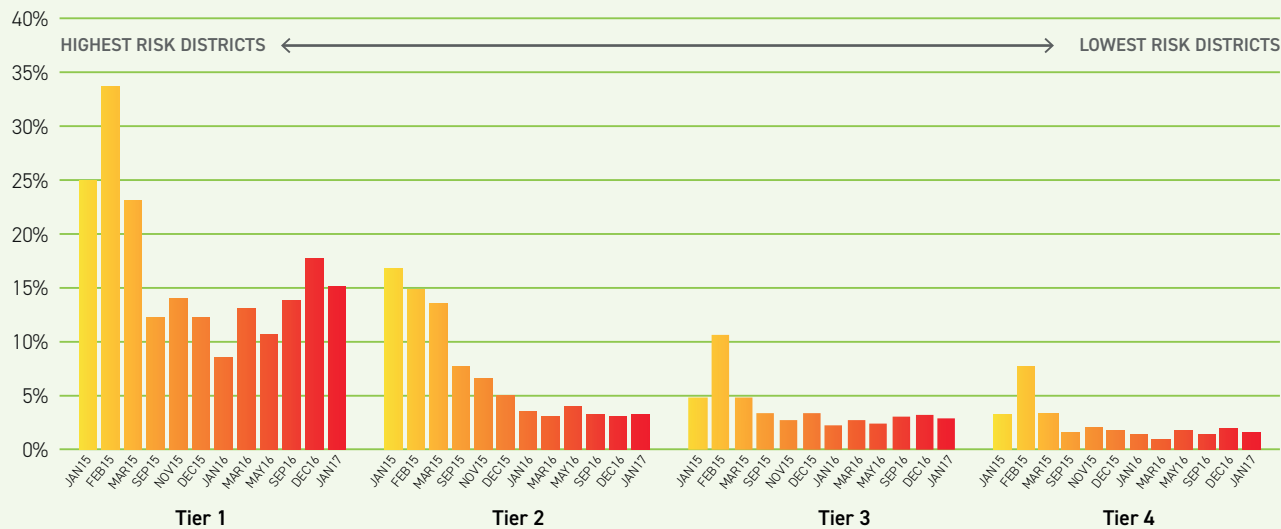


These numbers are indicative of the patterns of movement and unclassified children have been excluded.

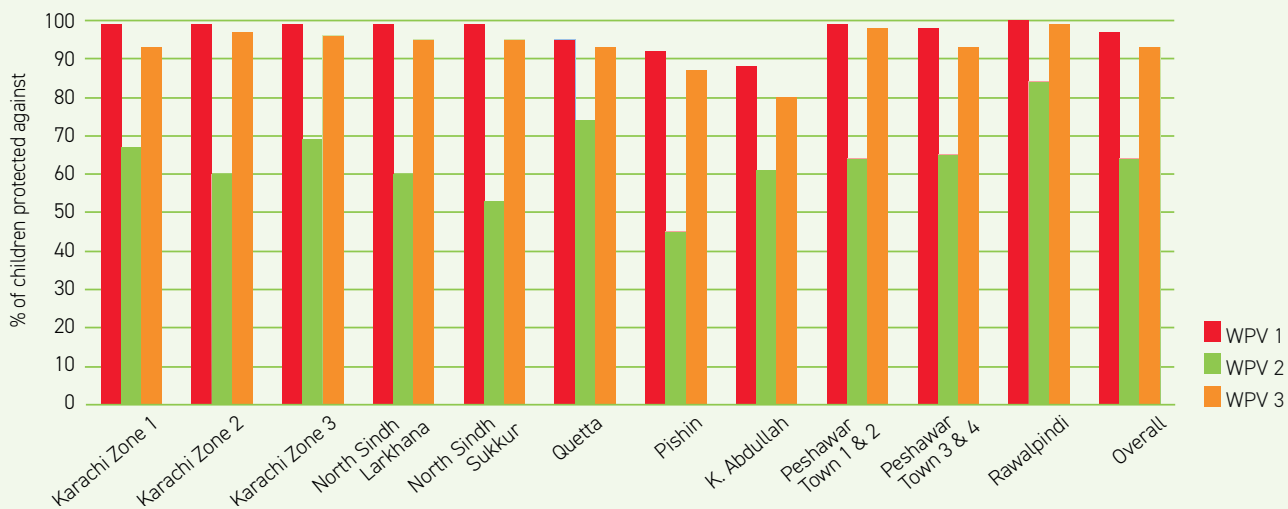
Source: World Health Organization

DATA INSIGHTS

Proportion of children missed after catch-up highest in Tier 1 districts



Seroprevalence data

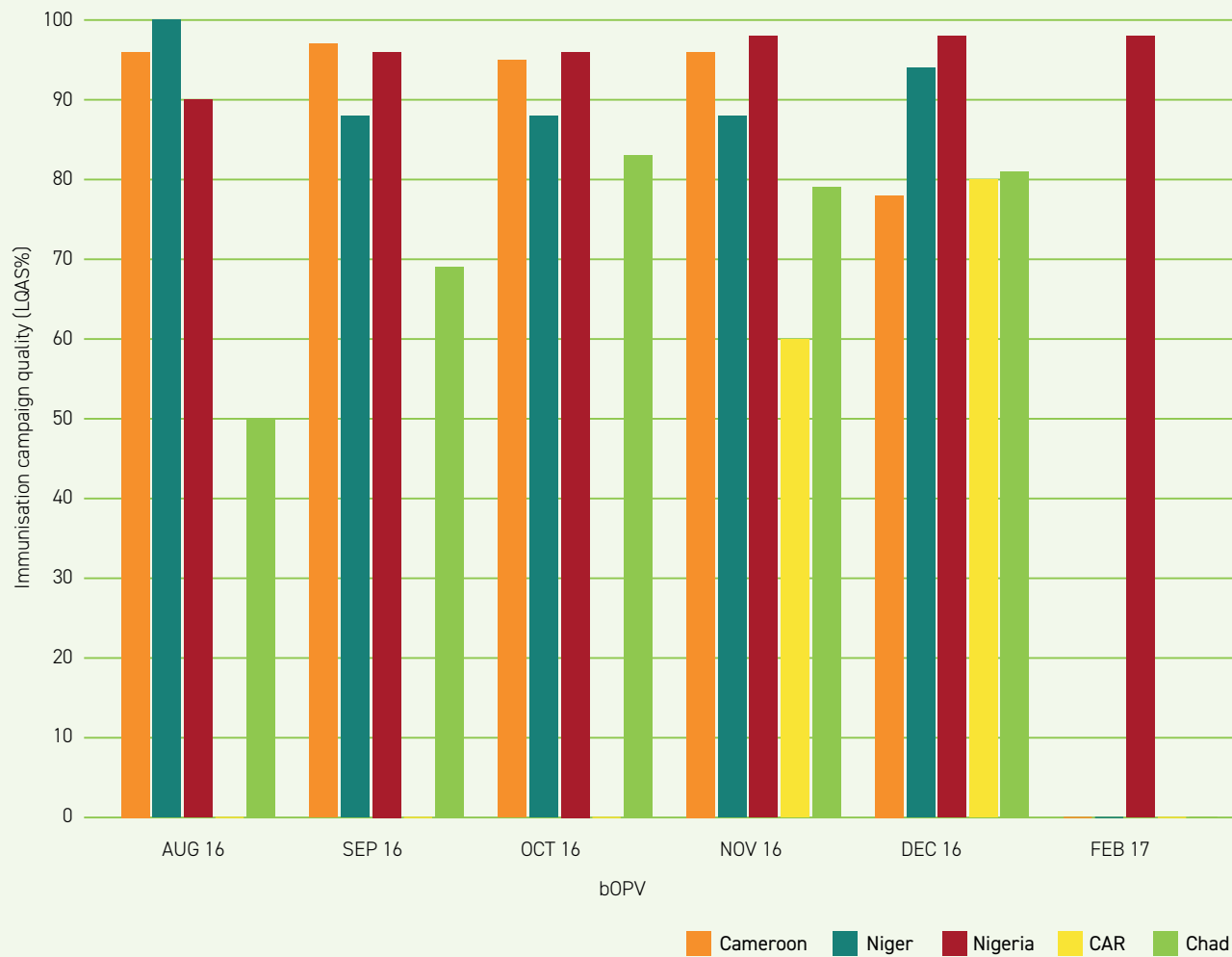




DATA INSIGHTS



Quality of the immunisation response in the Lake Chad region to the discovery of poliovirus in Borno

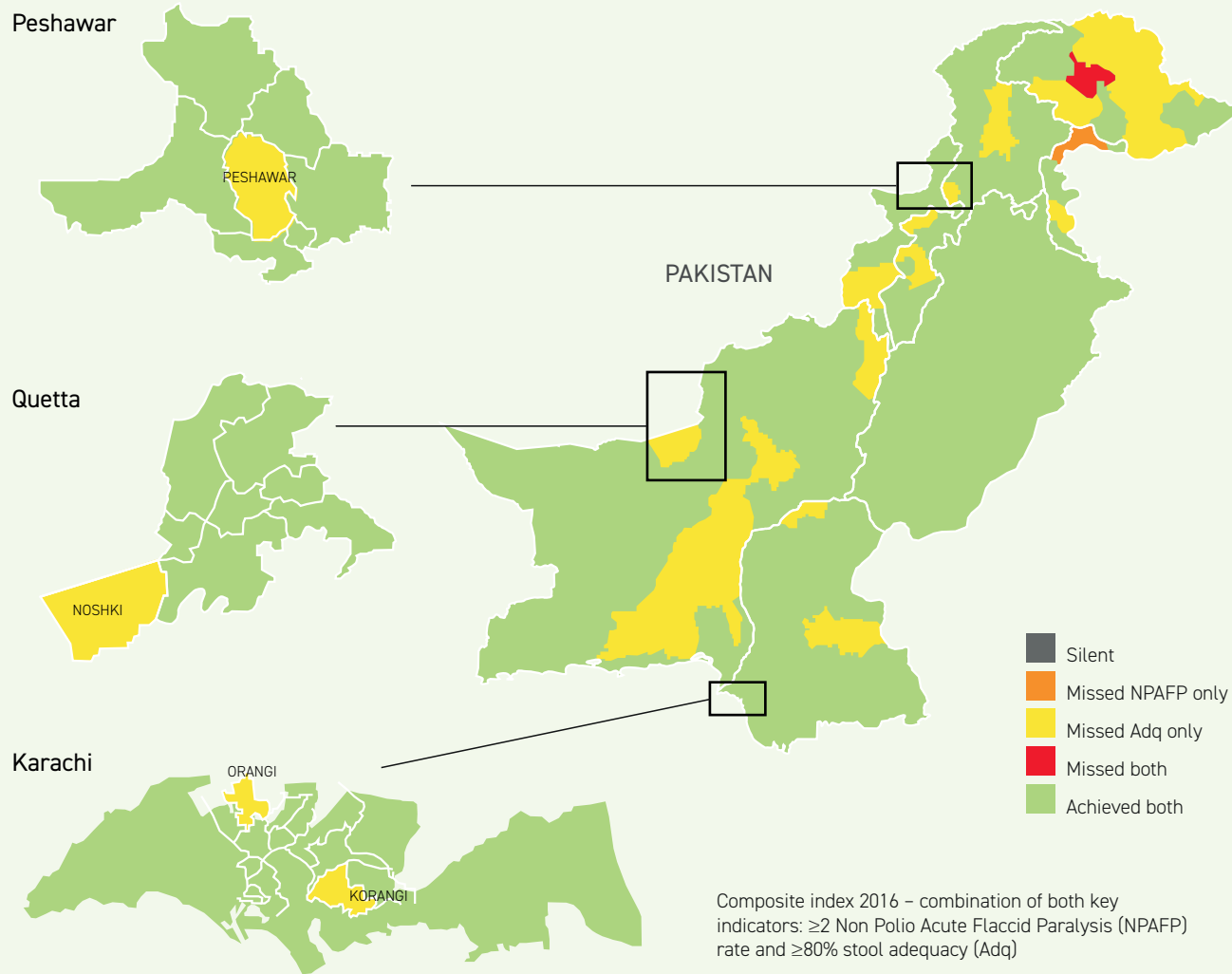




DATA INSIGHTS



Improving surveillance in Pakistan – but pockets of poor performance remain

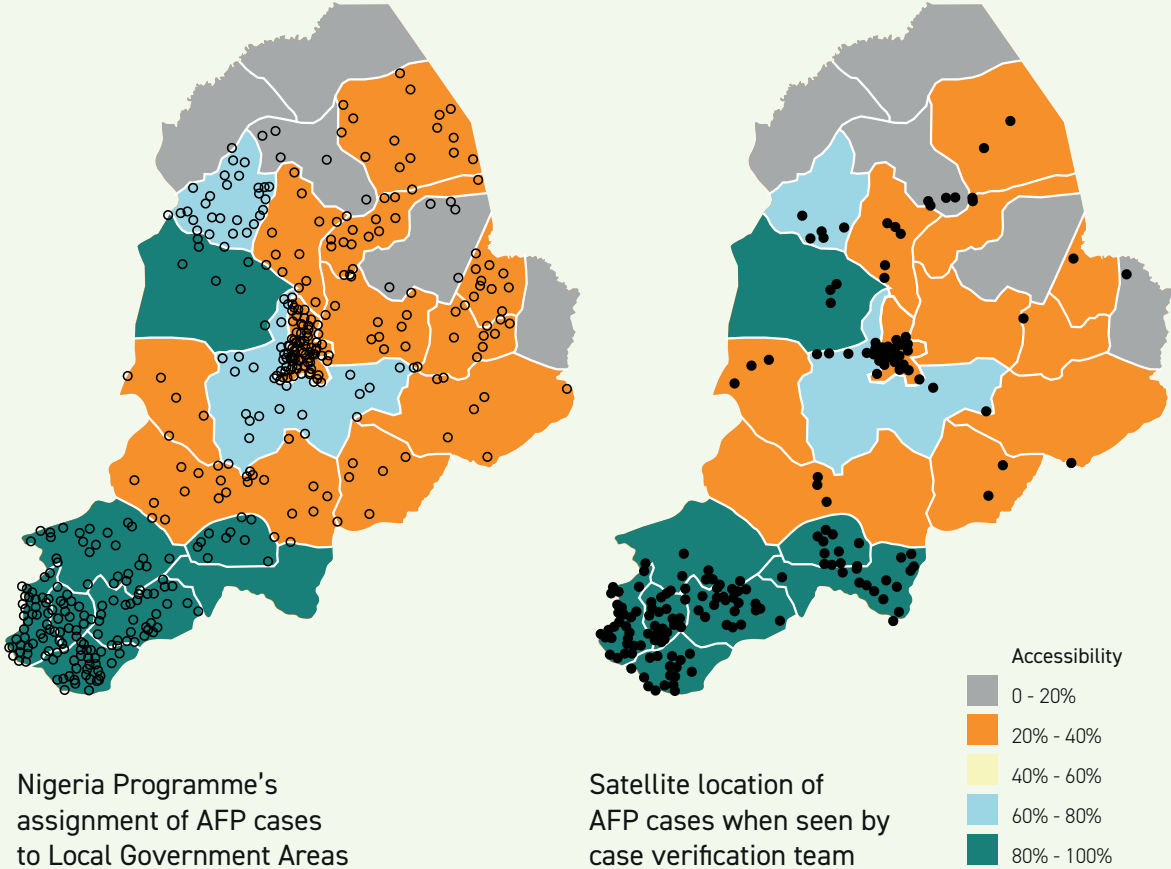




DATA INSIGHTS



Worrying approach to Polio surveillance in Borno, 2016

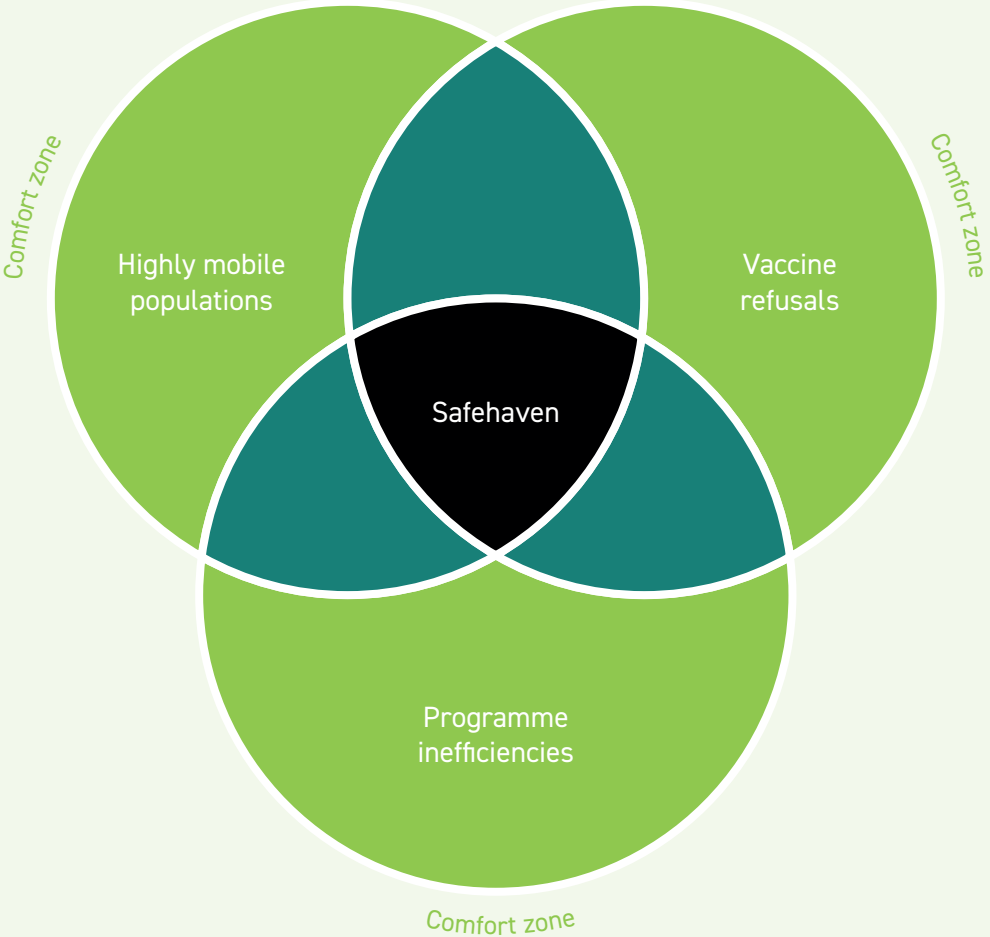




DATA INSIGHTS



The poliovirus comfort zones

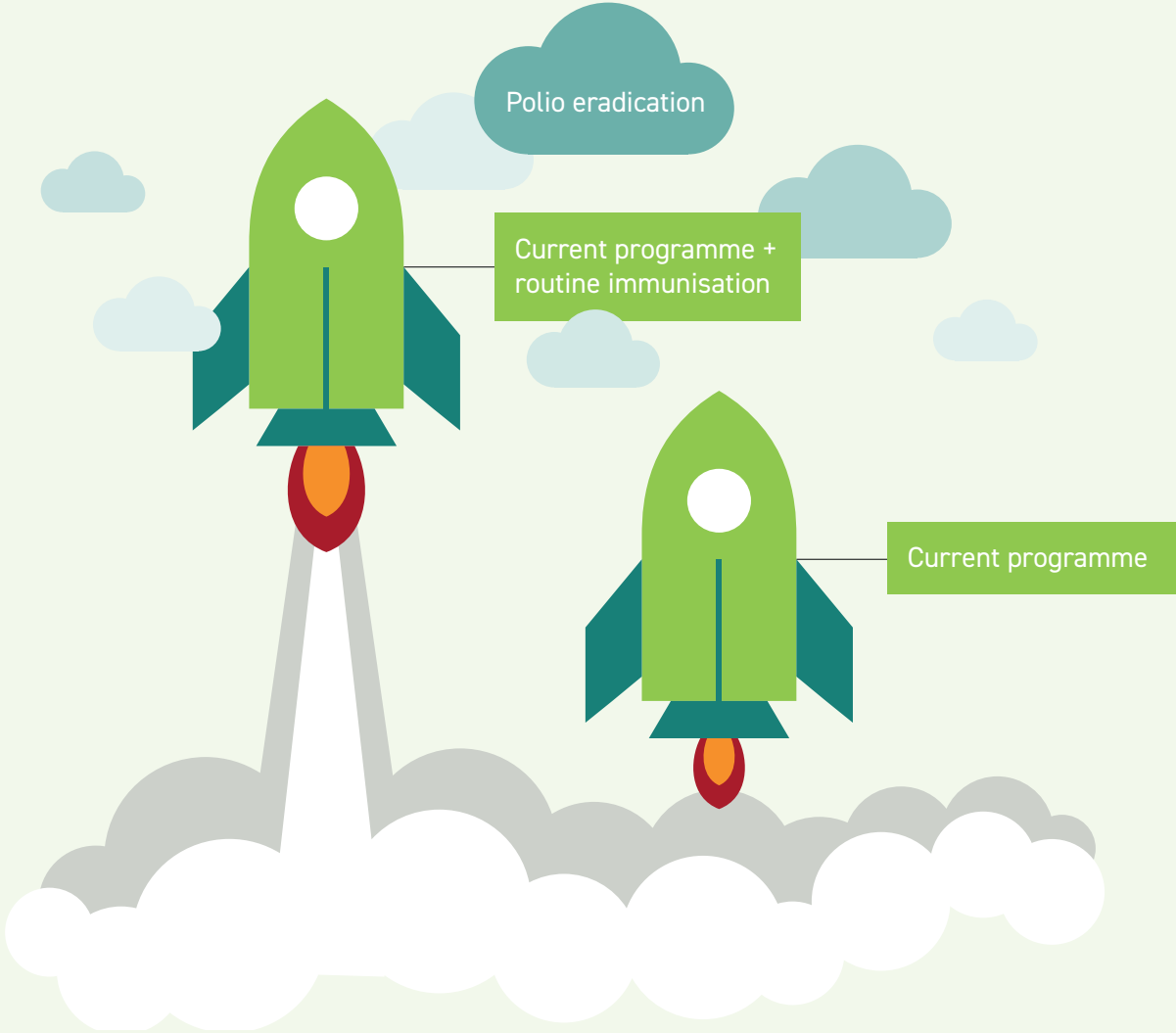




DATA INSIGHTS



Routine immunisation could be a rocket booster in the polio reservoirs





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