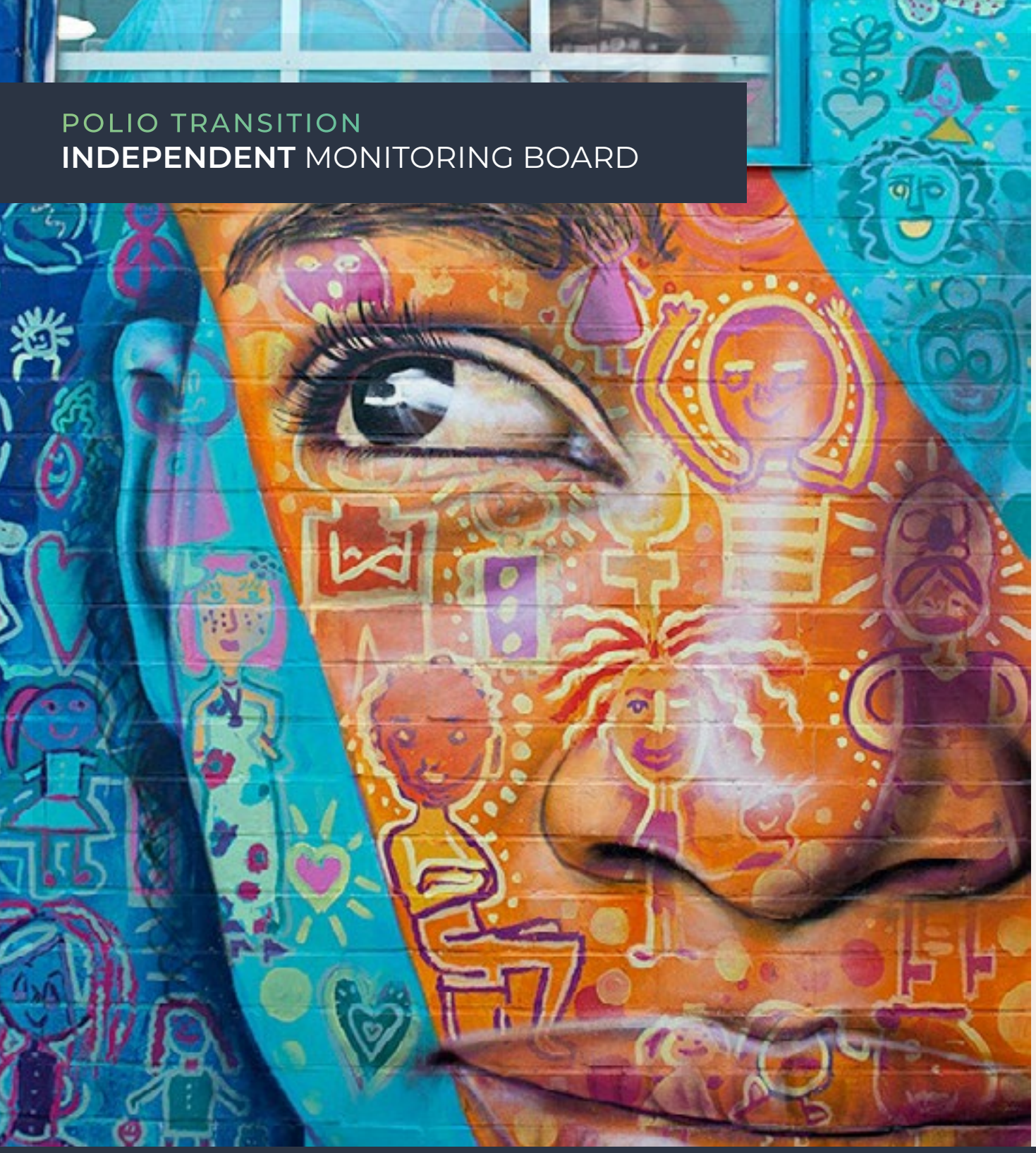
POLIO TRANSITION
**INDEPENDENT** MONITORING BOARD



JANUARY 2021

FOURTH REPORT

# NAVIGATING COMPLEXITY

Adapting to new challenges on the journey to a polio-free world

POLIO TRANSITION
# INDEPENDENT MONITORING BOARD

## Members

**Sir Liam Donaldson**, Former Chief Medical Officer for England, Professor of Public Health, London School of Hygiene and Tropical Medicine, United Kingdom.

**Professor Sheila Leatherman**, CBE, Hon RCP, Professor of Global Health Policy, Gillings School of Global Public Health, University of North Carolina, USA.

**Dr Boluwatife Oluwafunmilola Lola-Dare**, President, Centre for Health Sciences Training, Research and Development CHESTRAD Global, Nigeria.

**Dr Senjuti Saha**, Scientist, Child Health Research Foundation (CHRF), Bangladesh.

## Independent status

The TIMB's reports are entirely independent. No drafts are shared with WHO or other organisations prior to finalisation.

# CONTENT

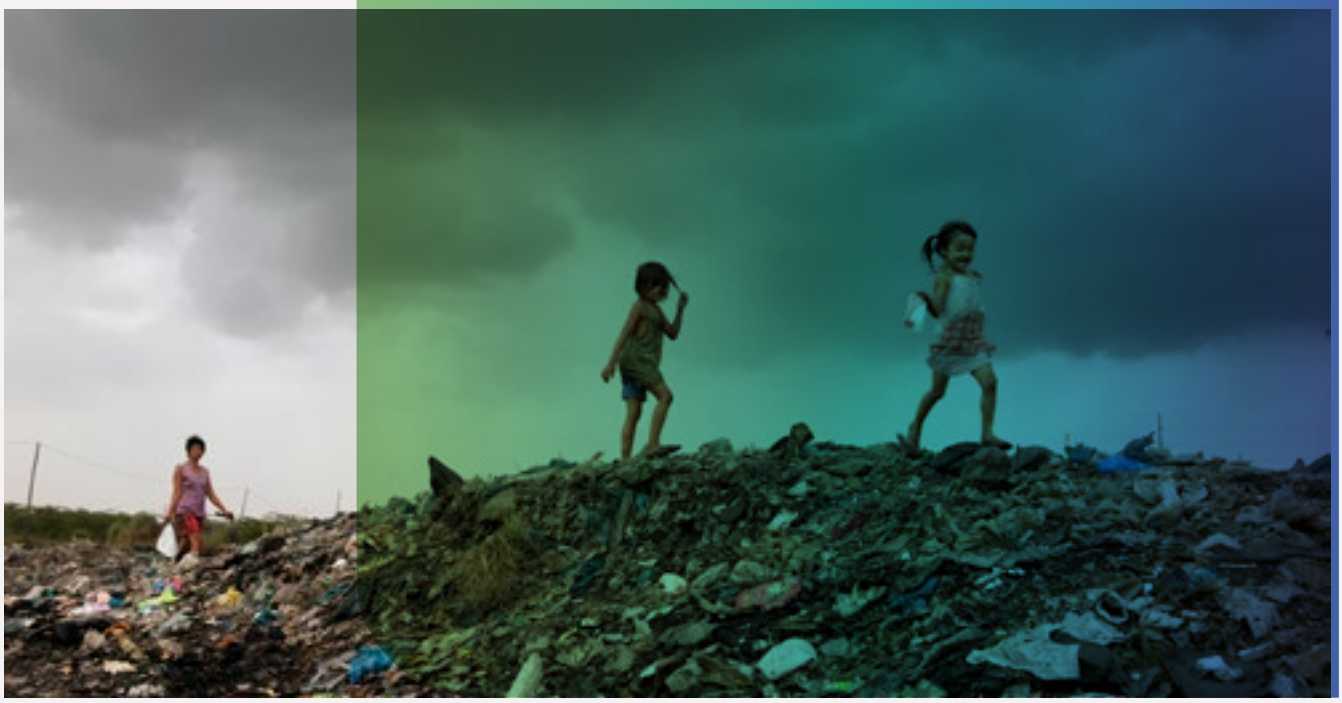


# 1 BACKGROUND AND OVERVIEW

The Transition Independent Monitoring Board (TIMB) was created in 2016 by the Global Polio Eradication Programme (GPEI) to monitor and guide the process of polio transition planning.

It has produced three reports, and this is the fourth. Following WHO taking over the leadership and management of polio transition planning from the GPEI, the TIMB was reconstituted.

It is now convening under new terms of reference matched to the *Strategic Action Plan on Polio Transition 2018–2023* that was received by the 71st World Health Assembly in May of 2018. Under the new arrangements the TIMB works closely with the Independent Monitoring Board (IMB) that has been evaluating the process of polio eradication since 2011.



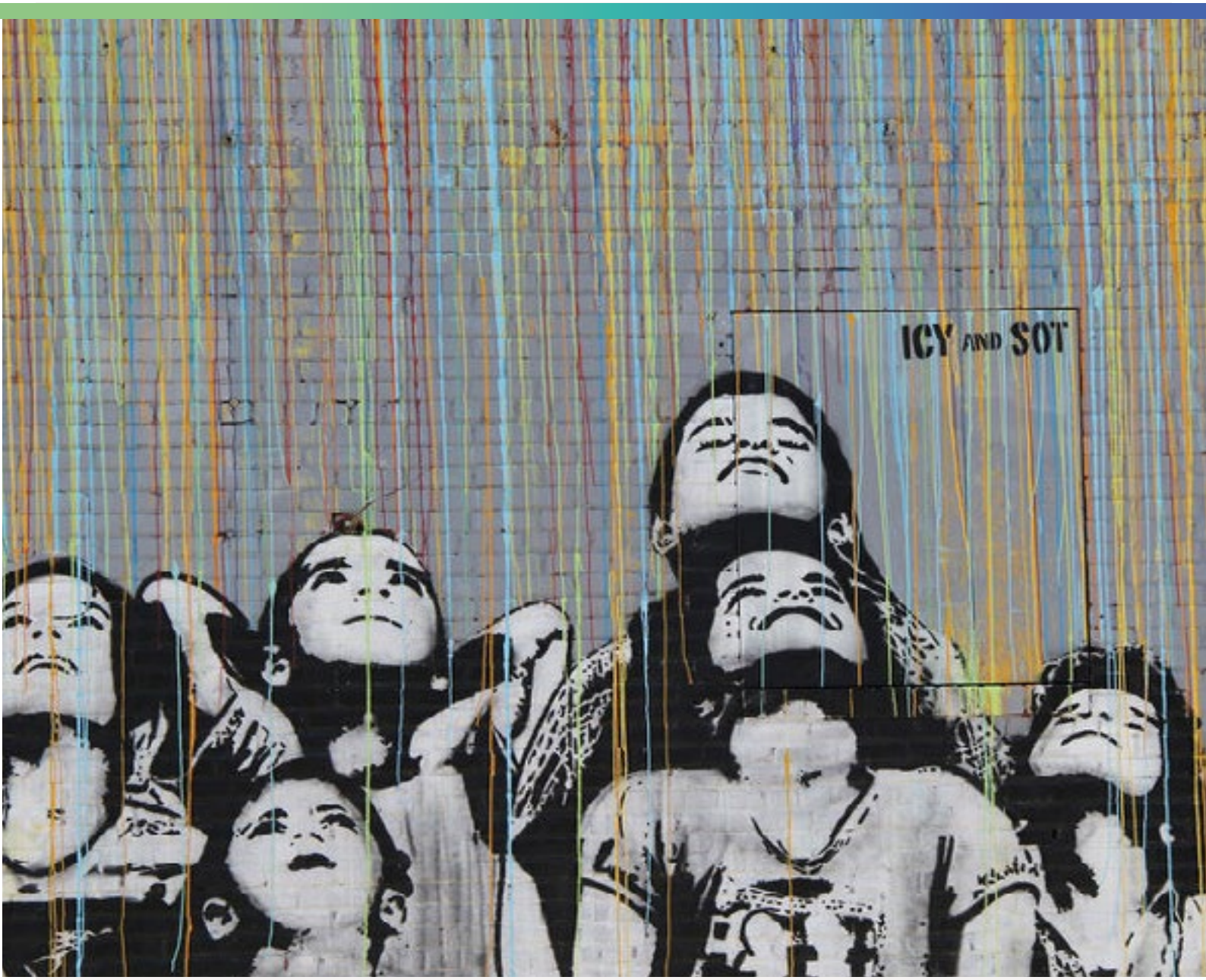
# TIMB MEETING IN NOVEMBER 2020

The new TIMB was due to have its first formal meeting in July 2020. It was asked to postpone this meeting until the autumn of 2020 because of the unprecedented pressure on WHO's management team caused by the coronavirus pandemic.

It did hold a series of informal discussions with the WHO Polio Transition Team and polio stakeholders during July 2020. This helped to gain an understanding of the state of polio transition planning as work in countries was about to resume following the first wave of COVID-19.

The TIMB met between 3 and 5 November 2020. This report is based largely on the presentations and discussions at that meeting. The meeting was opened by WHO's Deputy Director-General. It heard presentations from WHO's Polio Transition Team, and leaders of work programmes on essential immunisation; health emergencies; global vaccine-preventable disease surveillance; and laboratory containment and security.

A wide range of delegations attended the meeting and participated in discussions. They included donors, polio extended partners, UNICEF, Gavi (Global Alliance for Vaccines and Immunisation), CDC (US Centers for Disease Control and Prevention), Rotary International, the Bill & Melinda Gates Foundation, and polio transition leads from the Africa, South-East Asia, and Eastern Mediterranean regional offices of WHO.




# INTERFACE WITH 19TH IMB REPORT ON POLIO ERADICATION

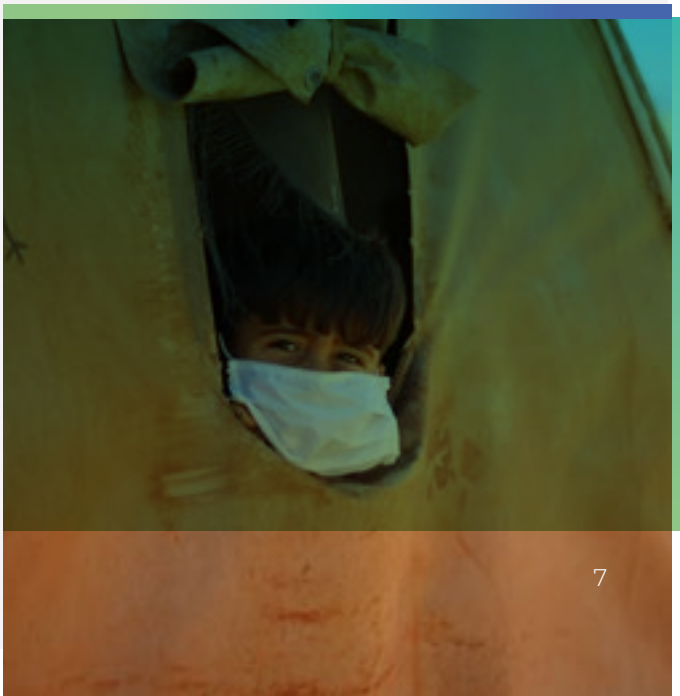
The IMB met shortly after this, and its 19th report *(The World is Waiting)* is now available. It should be seen as a companion document to this TIMB report. To gain a full understanding of the process of polio transition, including the current state of polio eradication and the complexity of the polio-essential functions required to deliver a polio-free world, it is necessary to read both reports.

# HISTORY OF POLIO ASSETS PROVIDING WIDER SERVICES

Over more than three decades, the GPEI has set up infrastructure to pursue polio eradication in countries around the world. This has supported not only polio eradication-related activities, but also functions that go well beyond this core purpose, including: vaccine-preventable disease surveillance with the laboratory functions; essential immunisation activities; new vaccine introductions in many countries; emergency preparedness and response; and health system strengthening.

In addition to these programmatic functions, the GPEI has cross-subsidised the operations support. Services such as logistics, data, finance, human resources and administration are essential to running the polio eradication work but they, too, have become shared much more widely.

Countries in a substantial part of the world, particularly the Africa, Eastern Mediterranean and South-East Asia Regions, have become heavily reliant on the GPEI infrastructure to sustain the broader public health functions. Most of the support on the ground is provided through the two, polio-eradication implementing, United Nations agencies. In order to protect these functions and ensure a smooth transition to the countries' governments, careful planning is needed.

# PREVIOUS TIMB EVALUATIONS OF PROGRESS

The TIMB's three previous reports on polio transition planning were carried out whilst the GPEI was facilitating and overseeing the polio transition planning process.

At that time, it was made clear that polio eradication funding would not be available beyond the period of eradication to fund polio assets that are subsidising other public health services at country level. Also, the GPEI signalled that it would be reducing funding and in due course be dissolved as an organisational entity.

A core purpose of polio transition became shifting the functions and funding from the Polio Programme to country governments and national health programmes.

The certainty regarding termination of funding required countries to undertake the necessary planning towards retaining polio assets through self-sufficiency (either paying out of domestic budgets or mobilising external donors). This process was initially led by the GPEI Transition Management Group using funded consultants to carry out the detailed work resulting in each polio transition country having a plan.

The TIMB had two principal concerns at the end of the GPEI's oversight of polio transition planning. First, that many countries were struggling with the reality of finding sufficient funds for staff and public health infrastructure. They had received these resources from the GPEI, as a free good, for decades. Second, progress described at TIMB meetings was not consistent with what informed observers were saying: that many polio transition plans were largely statements of intent and had not always engaged senior ministry of health and United Nations agency country staff.

At that point, leadership for polio transition planning passed from the GPEI to WHO.

# ADOPTION OF A FORMAL PLAN FOR POLIO TRANSITION

A *Strategic Action Plan on Polio Transition 2018–2023* was requested by the 70th World Health Assembly in decision WHA70(9) (2017) and noted by the 71st World Health Assembly in 2018.

It has three key objectives:

1. To sustain a polio-free world after the eradication of poliovirus;
2. To strengthen immunisation systems, including surveillance for vaccine-preventable diseases, to achieve the goals of *WHO's Global Vaccine Action Plan 2011–2020*;
3. To strengthen emergency preparedness, detection and response capacity in countries to fully implement the *International Health Regulations* (2005).

These remain the three pillars of polio transition planning.

At the policy-making level, the tenor of the debate on polio transition was initially one of frustration with the speed of progress. This is reflected in some of the interventions during the May 2018 World Health Assembly discussions, for example, the European Union:

> *"Unless implementation of the polio transition plan is accelerated, we foresee a significant risk for global health security. But time is running short. The WHO's efforts, hence, must be energised".*

# THE MONTREUX STAKEHOLDERS' MEETING: NOVEMBER 2018

Following the World Health Assembly's adoption of the *Strategic Action Plan on Polio Transition 2018–2023* in May 2018, the next step in the global coordination of the polio transition planning process was a meeting convened by WHO in Montreux, Switzerland on 13–14 November 2018 entitled Supporting Polio Transition in Countries and Globally: A Shared Responsibility.

This important gathering was seen as being the first of a series of stakeholder meetings planned to guide polio transition; the meeting's objectives included: clarifying the implications for polio transition of the new 5-year GPEI Strategy; identifying existing and potential financing options for polio transition; evaluating ways of achieving a smooth transition; and discussing options for governance of the polio transition and post-certification process.

In-depth discussions took place on the four thematic priorities of polio transition: comprehensive vaccine-preventable disease surveillance; outbreak emergency response; strengthening immunisation; and poliovirus containment. The meeting also explored options for future governance.

The conclusions of the Montreux meeting captured the consensus view of multiple stakeholders:

- There is a need for more high-level political advocacy on the important opportunity that transition offers for helping achieve broader global health initiatives;
- Transition support must take into account the differences between countries' situations and capacities and keep a clear focus on the country level;
- Funding to sustain polio assets remains problematic for many fragile or low-resource countries;
- The extension of the GPEI (on account of slow progress towards polio eradication) should not lead to reduced pace in the transition of polio assets;
- In endemic countries, transition must not detract from eradication, but concurrent planning work can kick-start transition once polio is eradicated;
- Transition planning will not only strengthen eradication efforts, but also contribute to strengthening health systems and emergency response capacity;
- Gavi is committed to working with eligible countries to determine and potentially support immunisation-essential functions at risk due to decreasing polio budgets; assistance would be through existing country-level resources, and time-limited to bridge to more sustainable funding sources.

# WHO TAKES THE LEAD FOR IMPLEMENTATION

Leadership and oversight of polio transition are now being provided by a high-level Global Polio Transition Steering Committee, chaired by WHO's Deputy Director-General. Regional steering committees have also been formed or reconvened to oversee polio transition in the Africa, South-East Asia and Eastern Mediterranean WHO regions.

Polio transition is a corporate priority for WHO. There is much wider programmatic involvement than before, in managing polio transition activities within WHO across the three levels of the organisation (global, regional, country).

A corporate work plan defines roles and responsibilities and includes activities to be performed by the technical departments across the three levels of the organisation. It attributes responsibilities to the Office of the Deputy Director-General, the Polio Transition Team, the regional offices, and departments at headquarters responsible for work on polio eradication, immunisation and health emergencies. These coordination structures and functions aim to facilitate the implementation of the *Strategic Action Plan on Polio Transition 2018–2023*.

Whilst the WHO is the lead planning and implementing body for polio transition, the successful delivery of the programme can only be achieved through cohesive partnership working. Key partners include the spearheading polio-eradication partners (UNICEF, Gavi, Rotary International, the Bill & Melinda Gates Foundation and CDC), donor countries and wider polio partners. As time has passed, the need for, and importance of, involving other organisations and groups has become apparent.

In May 2020, the World Health Assembly revisited polio transition planning and received an update on implementing the strategic plan. A further progress report (EB148/23) will be provided to the 148th session of the WHO Executive Board in mid-January 2021.

# THE CONSTRAINTS AND OPPORTUNITIES OF COVID-19

The countries' polio transition plans were all written before the COVID-19 pandemic began. The pandemic has temporarily halted the implementation of polio transition action. It has also had a negative impact on key disease prevention and control functions for polio and other vaccine-preventable diseases. In particular, surveillance and planned immunisation work have been hit hard. Activities in some countries resumed in late July 2020.

Repurposed polio assets have played a vital, game-changing role in fighting the pandemic disease at national and subnational levels. This has involved using polio staff, structures and working methods, together with mapping and information systems that are the mainstay of polio eradication work.

The COVID-19 work of the Polio Programme has opened up insights and opportunities as to how some of the goals of polio transition (e.g. integrated service delivery) can be achieved more rapidly or in new ways. This so-called "silver lining" of the pandemic is encouraging, but it needs to be viewed cautiously, given the potential for further waves of the pandemic to be all-consuming of staff time and resources.

For most of 2020, the normal process of detailed assessment of countries' states of readiness and timetables for full implementation of polio transition has not been possible because of the constraints of COVID-19.

# REGIONAL AND COUNTRY STATUS REPORTS

Each country's transition plan aims to define how the government will integrate essential public health functions – supported until now by external funding – into its national health programmes. The transition plans include mapping human resources and, where possible, matching and aligning them to existing functions within the country's national health priorities.

The transition plans address how to mobilise resources and to replace GPEI funding. In most cases, the ideal approach is for the government to absorb these functions and provide domestic funding. In some cases, there is a need for external support. In fragile and conflict-affected countries, this will have to be longer-term support. Almost all countries' plans involve a phased approach, not an abrupt shift from GPEI funding to government self-sufficiency. There is a long-standing concern about the difficulty of transferring United Nations field staff to government contracts because of the salary difference.

The polio transition process started with a list of 16 priority countries for

polio transition: those where the Polio Programme has the largest footprint (i.e. most staff and funding invested). These countries are Afghanistan, Angola, Bangladesh, Cameroon, Chad, Democratic Republic of the Congo, Ethiopia, India, Indonesia, Myanmar, Nepal, Nigeria, Pakistan, Somalia, South Sudan and Sudan.

Four countries were subsequently added to this list: Syria, Libya, Iraq and Yemen. They were included primarily because they are fragile, or conflict-affected, states. The funding and infrastructure provided to them by the GPEI is not high, relative to the 16 priority countries, but does support critical areas and key functions. The four are now part of the official list of polio transition countries, bringing the total to 20.

The commentary and analysis of countries' progress with their polio transition plans in this section of the report reflects the limitations imposed by the pandemic. Country visits organised by the WHO headquarters Polio Transition Team could not take place. Nor could TIMB members make their planned visits to polio transition countries. Helpful information and judgements on progress have been provided by each of the three WHO regional offices. They have a major role in facilitating the further development of plans, assessing progress and coordinating implementation. The country position statements in the sections that follow are not standardised but reflect the different approaches that have been taken in the three regions.

# SOUTH-EAST ASIA REGION

The South-East Asia Region of WHO was certified polio-free in March 2014. Of the 20 polio transition countries, five are in this region: Bangladesh, India, Indonesia, Myanmar and Nepal.

There are substantial polio eradication-funded assets supporting both surveillance and immunisation in each country. Systems have evolved to underpin the other immunisation-related actions that have contributed towards measles and rubella elimination, maintained surveillance for vaccine-preventable diseases, strengthened immunisation systems, and provided support during emergencies and disasters in the region.

The polio assets have been highly valued by the countries. All five countries in the region have developed national plans. There is a very strong commitment to polio transition planning in this region, both from the highest levels of WHO and in ministries of health. Ministries of finance are also engaged in the process.

The polio transition plans remain at different stages of endorsement and implementation. So far, the countries have preferred that WHO should continue to manage and, in some cases, finance the integrated networks, at least in the short- to medium-term.

India has a two-phase plan that has been formally endorsed by the government. The first phase runs from 2018 to 2021, and the second from 2022 to 2026.

With the first phase coming to an end, there has been a total transition under a national plan called *Polio to Public Health*. This enables the polio assets now supporting polio surveillance, and other activities related to maintenance of polio-free status, to become engaged with supporting measles and rubella elimination, vaccine-preventable disease surveillance, new vaccine introduction and health emergencies.

There has been a handover of functions, using a state-based approach. It is graded depending on

the capacities of individual states in the country.

There has been an emphasis on capacity-building within government systems, so that there is no compromise or loss of the gains that have been made. A key element has been the funding support from the government to sustain these assets. A mid-term assessment has been carried out, covering programmatic and non-programmatic areas (including human resources, operations and finance). The programme will be moving into phase two from 2022 onwards.

The key conclusion of the mid-term assessment was that polio transition has significantly contributed to strengthening the overall public health systems in India.

The India Government's commitment and vision, as well as the WHO's leadership, has placed the polio infrastructure in a key role both nationally and subnationally. There has been an increasing government financial commitment, including support from the government of India to WHO for immunisation infrastructure.

The gaps identified as a part of this mid-term assessment, include degrees of ownership varying between state governments and the lack of direct interface between the administration and the finance teams of the Ministry of Health and WHO.

The review recommended joint work to develop a transition road map adapted to the subnational level. The Ministry of Health was urged to encourage the state governments to fully engage in the transition process and also have a point person to support polio transition with WHO. The assessment team has recommended developing a risk mitigation plan.

**Bangladesh** has a plan that is fully endorsed by the national government. It started in 2016 and extends to 2026. Implementation is happening in three phases, with the first phase completed.

Some of the milestones were delayed towards the early part of 2020. Surveillance and immunisation functions have been merged. The surveillance activities are now budgeted in the government's operational plans, which include laboratory functions, training and outbreak response. Bangladesh has relied on GPEI and Gavi funding in this first phase.

Phase two has been initiated. WHO continues to manage the infrastructure. It will be funded through Gavi health system support as well as with government funds.

Phase three will run from 2023 onwards. This is when the plan intends that there should be a complete government takeover of the infrastructure. Thereafter, it will recruit and train new staff.

**Nepal** has taken a two-phased approach. The first is from 2017 to 2019 and the second, from 2020 to 2024.

The country is adopting a system of federalisation. This has led to a delay in the government's endorsement of its polio transition plan. Immunisation activities are fully integrated in Nepal.

The current funding sources remain the GPEI and Gavi (mostly the health system strengthening stream). There are risks to mid- and longer-term funding in Nepal, especially after Gavi funding ends in 2021. COVID-19 may affect available funding, jeopardising the allocation of domestic resources to polio transition.

**Myanmar** has the goal that the government will take over after a successful period of capacity-building. There is a year-to-year transition road map. Subnational government positions are being created to replace the regional surveillance officers. There are delays in filling these government posts. The pandemic has also reduced the pace of polio transition. The mid-term financial sustainability remains a concern.

Myanmar has a very different organisational arrangement to those of India, Bangladesh and Nepal, where field personnel are recruited by WHO. Field staff are deputed to their roles from the government on an annual basis.

**Indonesia** does not yet have a formally endorsed government polio transition plan. It has taken action to provide funding and assume responsibility for a number of polio programmatic functions. Indeed, WHO support in Indonesia is limited to core technical support at national and subnational levels. The GPEI- and WHO-supported costs are partially incorporated into the government budget. This includes the surveillance officers, polio-essential facilities and polio laboratories.

Indonesia is considered low-risk for polio transition planning, but, programmatically, there are performance concerns. It is a large country and the immunisation and surveillance performance are weaker than in some of the other polio transition countries. There has been surge capacity for the vaccine-derived poliovirus outbreak response.

# EASTERN MEDITERRANEAN REGION

The Eastern Mediterranean Region is the only region of the world yet to eradicate polio; there are two endemic countries: Afghanistan and Pakistan. Over the last decade, the polio eradication initiative has provided over $2.8 billion to the region. The majority of this funding (80%) has gone to the endemic countries.

The region is characterised by many acute and protracted humanitarian emergencies. The unmet medical needs of refugees and displaced persons greatly increases pressures on already weak health systems. The existence of both humanitarian crises and fragile governments inevitably delays polio transition planning.

There are eight priority countries. Four were in the 2018 definition of priority countries: the two endemic countries – Afghanistan and Pakistan – plus Somalia and Sudan. The four countries added to the list of priority countries for polio transition are Yemen, Iraq, Libya and Syria and many of the others are suffering from governmental instability, conflict and/or major humanitarian emergencies.

The GPEI policy is that the polio-endemic countries of **Pakistan and Afghanistan** must focus on eradication and not embark on a transition programme, though some polio vaccine is delivered as part of essential immunisation arrangements. A full analysis of the polio situation in these two countries is in the 19th IMB report.

The conditions in **Yemen** currently militate against both ongoing polio-related operations as well as planning for transition. There are no GPEI-funded polio staff. The polio team lead has been absorbed by the WHO essential immunisation function. Funds are provided by the GPEI to support surveillance costs, including government field staff and health professionals who report acute flaccid paralysis cases.

There are huge delays in surveillance, and response campaigns are extremely difficult to mount. Over the past two years, no campaign has been conducted in the north, where the vaccine-derived poliovirus outbreak originated.

In **Syria**, there is a small polio team at the national level. There are also a few surveillance staff at the subnational level,

employed on a contractual basis. Their salaries are shared with the health emergencies function of the WHO regional office. They do work for both polio and health emergencies programmes.

Although Syria is extremely insecure, the government has expressed willingness to absorb core polio functions. The GPEI is not confident that there is sufficient government capacity currently. However, it is possible that these functions could be absorbed into the Health Emergencies Programme, as the two programmes already work very closely together.

There has been no Polio Transition Team country visit to Syria yet, so once the COVID-19 situation improves, these discussions can get underway. The polio team has provided support during the COVID-19 outbreak, and WHO polio teams are in discussion with the WHO Health Emergencies Programme at headquarters level to help cover costs for up to six months.

**Libya** is one of the more complex conflicts in the region. There are no GPEI human resources in place. One international position was abolished and the functions were transferred to two national positions. These have not yet been appointed; because of this, Libya has been described as "already transitioned." Technically, this may be so but the country's health systems are very weak. It is essential to ensure that surveillance continues and also that the national immunisation programme is strengthened. There are vaccine-derived poliovirus outbreaks in surrounding parts of the region that are a threat to Libya.

**Iraq** has begun its transition. In early 2020, the WHO polio-eradication funded field staff at subnational level were absorbed into the government structure. This means polio surveillance has been taken over by the government. There is a polio team at the national level, but it is hoped that this team may be absorbed by the WHO Health Emergencies Programme or the WHO Essential Programme on Immunization.

Iraq has a relatively strong health system with a health facility in every district, resulting in a comparatively robust immunisation programme.

Iraq's polio team has not provided significant support to essential immunisation strengthening or emergency outbreak response. Polio staff did not contribute greatly to the COVID-19 pandemic, as there are no longer any field staff at the subnational level. The surveillance indicators have deteriorated since COVID-19, as they have in all other countries. However, Iraq is the only country in the region that dealt with COVID-19 whilst it simultaneously reduced its field staff presence at subnational level. The regional office polio team is in the midst of assessing the quality of the government surveillance system. It wishes to investigate whether the reduction in polio field staff had any negative effect, or if deterioration was solely due to COVID-19.

**Sudan** is suffering from multiple crises. There is a vaccine-derived poliovirus outbreak that has led to surge-hiring of WHO polio consultants. There is no current prospect of reducing polio staff. There is also a weak essential immunisation system, with approximately 13 different vaccine-preventable outbreaks, including diphtheria and measles. There are also floods which have put approximately 4.5 million people at risk of vector-borne diseases.
The polio footprint in Sudan is medium sized: there are 18 states and almost one polio field staff member per state. The health emergencies team has few people on the ground and relies on polio staff to detect and respond to outbreaks and provide technical support. The same staff are used in training to support essential immunisation strengthening. Sudan views its polio staff as general public health officers. So, informally, there has been an integration of sorts, but formally there has not. This means that polio staff are providing functions that go beyond the terms of their contracts.

**Somalia** is probably the most fragile polio transition country in the region, excluding the two polio-endemic countries. It has the largest number of polio-eradication funded staff, who work closely with the large numbers of WHO Health Emergencies Programme staff. UNICEF is also a key partner in funding some polio positions and the CORE group of non-governmental organisations (NGOs) has a small team too.

The WHO and other health agencies are currently running the health system of Somalia. There is a very small WHO immunisation department and a poorly performing essential immunisation system. The polio infrastructure contributes significantly to other national health priorities. There is huge reliance on the polio network across Somalia for public health service delivery, particularly outbreak response and vaccine-preventable disease surveillance. There are ongoing vaccine-derived poliovirus outbreaks. Transitioning assets and staff to the government is inconceivable at this point in time.

# AFRICA REGION

The Africa Region was certified free of wild poliovirus in August 2020. There are seven polio transition countries in the Africa Region: Angola, Cameroon, Chad, Democratic Republic of the Congo, Ethiopia, Nigeria and South Sudan. Six of these countries have developed costed national polio transition plans. The plans have not been fully implemented because of lack of funding. It was hoped that this would change from 2020, but with the COVID-19 pandemic, additional funding for polio transition plans is no longer possible.

Most of WHO's polio staff are in the Africa Region. So, there is a heavy dependence by public health services on the polio funding. Also, this is the region that has been most affected by circulating vaccine-derived polio outbreaks in recent years. This has had a big impact on progress with polio transition planning.

The combined effect of COVID-19 and large vaccine-derived poliovirus outbreaks on all polio transition countries in the Africa Region is very serious. This emphasises the fragility of the health systems in these countries and adds a sombre note to the good news that the Africa Region was certified free of wild poliovirus in August 2020.

There was hope that, from 2020, money would be put into polio transition plans. Most of the countries have said that they do not have the money to do so. Their immediate focus is on tackling COVID-19 and maintaining existing government-funded essential services.

**Angola** was among the first of the countries in the Africa Region to begin the ramp-down in polio funding. It fell by 40% between 2017 and 2020; this translated to a 60% staff reduction.

The country's priority has been to maintain the gains of stopping wild poliovirus circulation whilst, at the same time, supporting essential immunisation and responding to health emergencies.

The government has started to implement polio transition with support from Gavi and a loan from the World Bank. There were difficulties in transferring WHO staff onto Ministry of Health contracts because of the salary differences. However, it was essential to retain these skilled staff, not least because Angola had a huge vaccine-derived poliovirus outbreak in 2019 whilst, in 2020, it had to cope with COVID-19.

There has been an active planning approach in Angola, but it has been hampered by five changes of government. As a result, the team leading the polio transition process has had to go back each time and explain it to a different set of policy-makers.

In **Cameroon**, there was an 85% GPEI budget reduction between 2017 and 2020, but staff reductions were not started because of the risk of cross-border spread of wild poliovirus when Nigeria was still a polio-endemic country. The reductions did begin in 2020. The budgetary needs of the government's plan are unrealistic since they are pitched at a level in excess of previous GPEI funding. This is being addressed in discussion with WHO's regional office.

**Chad** has experienced an 80% GPEI budget reduction between 2017 and 2020, translating to 23% fewer staff. The staff reduction was deferred until 2020 because of the risk of cross-border wild poliovirus spread from (then) polio-endemic Nigeria. This country is also dealing with extensive vaccine-derived poliovirus and with serious economic difficulties, so earlier optimism about its polio transition prospects has dissipated. A realistic assessment is necessary of the budget required and its resource mobilisation prospects.

**Democratic Republic of the Congo** has been faced with large GPEI budgetary (81%) and staff (47%) reductions between 2017 and 2020. The country has experienced prolonged vaccine-derived poliovirus outbreaks since 2017. It has also been hit by outbreaks of Ebola, measles, cholera and other diseases. A mission was planned for the second half of 2020, to look again at this complex situation but it has been delayed because of the COVID-19 travel restrictions.

In **Ethiopia**, where there has been a 70% GPEI funding reduction as well as a 43% staff reduction between 2017 and 2020, the government's polio transition plan is under review by the national team there. Outside technical support is needed but this has not been possible because of the COVID-19 pandemic. The country continues to experience vaccine-derived poliovirus and measles outbreaks and other public health emergencies.

**South Sudan** has experienced a 75% GPEI funding reduction between 2017 and 2020. The government of South Sudan launched the Boma Health Initiative in 2017 as a national strategy to improve access to essential health services. It aims to standardise the package of community health services, to strengthen links between communities and primary health facilities, and to improve community ownership and governance of health services. It is intended to replace and harmonise the delivery of fragmented community health services supported by NGOs with funding from different donors.

Under this plan, polio transition would be embedded within this wider vision of health system strengthening. However, South Sudan is a fragile state with no early prospect of government funding. WHO's regional office has provided technical support with the national plan through a cross-cluster mission in 2019 and another is planned for 2021.

**Nigeria** has had the biggest polio infrastructure in the Africa Region. The country has a clear vision and sees polio transition within the context of developing primary care. The GPEI budget has been reduced by 81% from 2017 to 2020. In 2020 alone, 11 polio positions have been abolished in the country.

Rather than moving ahead with polio transition planning and costing, the government developed a business case which can be used to mobilise resources. The WHO regional office and other agencies provided technical support for this cross-cutting investment case.


# CRITICAL POLIO
## TRANSITION FUNCTIONS

WHO works through teams in its headquarters, regional offices and country offices to plan, deliver, strengthen and improve a range of technical functions that are critical to meeting the objectives of polio transition. In this endeavour, WHO works with the organisations that have been part of the polio eradication initiative, as well as an extensive group of partners with connections to each technical area.

The technical programmes, in particular, essential immunisation and health emergencies, have key roles and responsibilities in aspects of polio transition. It is not, though, their sole purpose and they have key objectives and programmes of work of their own that are vital to global health and global health security.

The TIMB heard from the teams leading these programmes about their contributions to polio transition planning and implementation, as well as their wider programmes of work.

# ESSENTIAL IMMUNISATION AND POLIO

There are three key considerations to achieving success for the essential immunisation component of polio transition planning:

- The first is to understand why strengthening essential immunisation is so vital to reaching and sustaining polio eradication;
- The second is to find the best approach to integrating polio eradication and essential immunisation activities;
- The third is to ensure that polio assets, experience and methods of working can be successfully absorbed into the global immunisation plan for the coming decade: *Immunization Agenda 2030: A Global Strategy to Leave No One Behind.*

For most of the polio-eradication era, the Polio Programme and essential immunisation activities have co-existed. There has always been a degree of tension between the two approaches.

Polio eradication is a highly-focused, vertical programme pursuing one disease, with a large, dedicated continuous flow of funding and its own workforce. It has been delivering

a single vaccine, predominantly via campaigns, many of which have been run door to door to try to reach every child. This way of working has suited the logistics of delivering an oral vaccine to the same children multiple times in a year. The outreach model has also fitted with the need to track down and vaccinate missed children and those in isolated or migrant communities that may not have access to other public health services.

Routine immunisation (the preferred term now is "essential immunisation") has sought to prevent and control a range of vaccine-preventable diseases through a broader, more developmental and longer-term approach with more complex funding arrangements; also, it has been playing a wider role in helping to strengthen primary health services.

Whilst some had long advocated a more integrated approach in which polio was embedded within a broader programme of immunisation, the leadership of the GPEI maintained that was a slower and less certain path to eradication.

This attitude began to change with the reversal of progress in polio eradication, particularly in Pakistan and Afghanistan.

In earlier TIMB meetings, some stakeholders made repeated warnings that transition must not go too fast. It was asserted that polio eradication had to be ahead of polio transition. This was because of the fear that transition would distract from finishing the job on eradication, using a vertical, campaign-style approach.

Unfortunately, over the last few years, polio eradication has run into serious trouble, with growing numbers of wild poliovirus cases in Pakistan and Afghanistan (the last two endemic countries) and outbreaks of vaccine-derived poliovirus affecting more than 20 countries. The paralytic effects of the vaccine-derived virus strain mean that it is wild poliovirus in all but name.

There are many reasons for the current situation in polio eradication. They are discussed fully in the 17th, 18th, and 19th IMB reports. The serious outbreaks of vaccine-derived poliovirus have been strongly associated with low essential immunisation coverage. Strengthening essential immunisation has become a critical element in reaching and sustaining polio eradication.

When levels of essential immunisation coverage are examined geographically, it is quite clear that polio is circulating in low-immunisation coverage areas. There is also circulation in countries that have higher coverage, but almost all is in subnational areas with low coverage for polio vaccine. These are the areas within a country that are at risk of vaccine-derived poliovirus outbreaks.

The wild poliovirus endemic areas and those countries with outbreaks of vaccine-derived poliovirus are many of the same places that are susceptible to measles outbreaks. The occurrence of either is a sign of serious weakness in the immunisation programme. They should be regarded as "canaries in the coal mine" for where programme strengthening is needed, not just through outreach campaigns but through better essential immunisation services.

Ten countries account for a little over 60% of all unprotected children (i.e. those who are not fully immunised). Reaching every last child is a key Polio Programme target. Reaching all "zero-dose" children (i.e. those children who do not even get a single dose of vaccine through the routine services) is the language used by the Essential Programme on Immunization to express one of its key goals. These goals are really two sides of the same coin.

The countries in the top ten are so-called because either they have very large birth cohorts and/or they have low vaccination coverage. For example, although India actually has high vaccination coverage, it still shows up in the top 10 of under-immunised children, because of the size of the birth cohort.

In order to reach both goals of the polio eradication programme – stopping circulation of the wild poliovirus and shutting down outbreaks of vaccine-derived poliovirus – there has to be high population immunity against

polio. Up until now, house-to-house polio vaccination campaigns have been a key method to enhance facilities-based immunisation in order to increase population immunity, especially in countries that have weak or fragile health systems. It is also how measles immunisation coverage is being sustained in some geographies.

In the move towards polio eradication, the delivery of both polio vaccines (eventually only through the routine platform) needs to be the mainstay of how immunity against polio is achieved; this is because it also creates immunity against other antigens.

Inactivated polio vaccine coverage is rising very substantially, but it has still not reached the coverage of even the most basic measure of the strength of the Essential Programme on Immunization. In all, 126 countries have successfully introduced inactivated polio vaccine into their routine schedules.

Whilst coverage is increasing, there are still missed cohorts because of supply shortages. This accounts for 22 million children in 23 countries. The process of introducing a second dose of inactivated polio vaccine will be scaled up in 2021, targeting 94 countries; of these, 32 have already introduced it. Although Gavi is supporting rapid introduction, there are likely to be COVID-19 constraints on what would otherwise have happened.

# INTEGRATING POLIO INTO BROADER SERVICE DELIVERY

Greater systematic integration of vaccine delivery can bring cost efficiencies and personnel efficiencies but, most importantly, efficiencies for families that are currently receiving services for more than one intervention at a time.

The symbolic message is child-centred: the child should be seen as a whole person and not just a polio vaccine recipient or a measles vaccine recipient. An integrated vaccine programme that is well organised can also give clarity to families so that they know what they expect to receive when they come for services.

The WHO is leading an interim Programme of Work for Integrated Actions that aims to accelerate the alignment and coordination of key partner agencies that work on polio and immunisation. It is identifying actions that will be required to meet the challenge of the current context of the COVID-19 pandemic. It also has the broader purpose of enhancing and improving both the immunisation programme and the specific polio goals.

The interim Programme of Work for Integrated Actions is a structured approach to thinking about exactly how to develop integration further. It has four strategic areas:

- Comprehensive vaccine-preventable disease surveillance;
- Community engagement and service delivery;
- Acute outbreaks;
- Management and coordination.

Focusing on technical and programmatic integration, each area has been assessed according to its immediacy (Could it address current and critical programmatic needs?), the

opportunities (Are there potential synergies across programmatic priorities?), and feasibility (Are there implementation steps that could be identified now?).

For each technical programme area – comprehensive surveillance, community engagement and service delivery, and acute outbreaks – the interim Programme of Work for Integrated Actions summarises the pre-COVID-19 status of integration, the new opportunities that are provided in the context of the pandemic, and the specific proposed actions.

The management and coordination functions are the critical enabling factor. Overall changes are proposed for oversight, operational management, advocacy and resource mobilisation. The focus is on integration of actions that are required within the immunisation community – the GPEI and the Essential Programme on Immunization – and also on integrated service delivery aspects that require coordination with other health programmes, for example, the Health Emergencies Programme, WaSH (Water, Sanitation and Health), and nutrition.

The interim Programme of Work for Integrated Actions is also intended to provide a "proof of concept" and inform the further mainstreaming of integration into the revision and operationalisation of both GPEI and broader essential immunisation strategic plans.

Integration is not an end in itself. It needs to be seen as something that adds value to the quality, efficiency and community value of services delivered. There will always be trade-offs. There will be risks being balanced against the potential benefits. For example, will an integrated model of delivery reduce the quality of campaigns or the intended size of population coverage?

As integration opportunities are sought, there will need to be a common framework for decision-making for mass vaccination campaigns so that the risks and the benefits can be evaluated and inform the nature of the specific integration activities. The elements to be considered when assessing where the biggest gains can be made on integrated activities are extensive and include epidemiological patterns, health worker capacity, training, supply chains and logistics, as well as communication strategies.

Whilst most discussion on integration has focused on bringing together the polio and essential immunisation programmes, recent WHO polio transition work has also promoted the wider adoption of "public health teams". This approach will install within WHO country offices single teams with accountability for the combined functions of polio, disease surveillance, outbreak preparedness, detection and response, and essential immunisation. It is already a form of integration operational in some countries.

# A NEW 10-YEAR GLOBAL IMMUNISATION STRATEGY

For the next decade, I*mmunization Agenda 2030: A Global Strategy to Leave No One Behind* has been created. Its vision is a world where everyone, everywhere, at every age, benefits fully from vaccines for good health and well-being.

It has seven strategic priorities that start with immunisation programmes for primary health care and universal health coverage. The other six priorities comprise commitment and demand; coverage and equity; life-course and integration; outbreaks and emergencies; supply and sustainability; and research and innovation. There are four core principles – people-centred, country-owned, partnership-based, and data-guided – that inform each of the seven strategic priorities. Polio is embedded in this *Immunization Agenda 2030* vision and strategy.

There is a monitoring and evaluation framework requiring global measurement of three impact goals: saving lives; controlling, eliminating and eradicating vaccine-preventable diseases; and reducing outbreaks of such diseases. One of the proposed indicators will assess progress on the goal to control, eliminate and eradicate vaccine-preventable diseases. Targets


will be based on updated regional and global commitments. Clearly, since polio has a global target, this is how it will be embedded in the monitoring and evaluation framework.

The *Immunization Agenda 2030* is seeking to put right a serious limitation of the Global Vaccine Action Plan 2011–2020. The earlier plan did not have a sufficiently strong ownership and accountability mechanism to drive action and results. For the *Immunization Agenda 2030*, a great deal of thinking has gone into how to secure meaningful ownership and accountability through the lifetime of the plan.

Accountability frameworks will be needed at all levels, not just at the global level and not just at country level. The Global Vaccine Action Plan 2011–2020 did report through the World Health Assembly and WHO's regional committees. This is still essential for the new plan, but responses to the consultation on *Immunization Agenda 2030* pushed very strongly for building ownership beyond WHO processes; the idea is to pull all the partners and different agencies into the ownership and accountability framework. Consultees also argued for very strong coordination.

There are three major plans that will need to be closely aligned and feed into the processes of integrating, strengthening, and securing the benefits of immunisation. They are: (i) *Immunization Agenda 2030*, (ii) a new GPEI strategy that will be published soon, and (iii) the fifth phase of Gavi's strategy covering 2021–2025 (often referred to as Gavi 5.0).

# HEALTH EMERGENCIES AND POLIO OUTBREAKS

The *Thirteenth General Programme of Work 2019 –2023* defines WHO's strategy for a five-year period and links to three targets related to universal health coverage, promoting health and well-being, and protecting people from health emergencies.

The scope of WHO's work in protecting people from health emergencies is to:

- Prepare for emergencies by identifying, mitigating and managing risks;
- Prevent emergencies and support the development of tools necessary during outbreaks;
- Detect and respond to acute health emergencies;
- Support delivery of essential health services in fragile settings.

When there is no longer dedicated GPEI-led capacity, vaccine-derived polio outbreaks responses will be led by health emergencies teams. Thus, the health emergencies function, through managing future polio events, is essential to creating a polio-free world, and is the last of the three pillars in the *Strategic Action Plan on Polio Transition 2018 –2023*.

The aim is to strengthen country emergency preparedness capacities over time, especially those of vulnerable or low-resource countries. This includes ensuring adequate surveillance systems, emergency event management, risk assessments, assessing workforce levels and testing of the readiness of their health systems.

A key area is to establish an evidence-based approach for identifying and managing potential epidemic and pandemic threats. As might be expected, there is now a whole strand of work prompted by COVID-19 covering accelerated research, development and innovation. Other work in this area is concerned with scaling up existing strategies (in particular, immunisation strategies) for yellow fever, cholera, meningitis, and with mitigating the risk of emergence and re-emergence of high-threat infectious pathogens (this work includes biosafety and biosecurity).

On the operational side of health emergencies, it is essential that they are both rapidly detected and responded to. Key functions come into play here: epidemiological surveillance; early-warning risk assessment teams; and scanning for, verifying, risk assessing, and monitoring all new events.

There is an Acute Event Management Unit in WHO headquarters which scales up operational and health technical operations in an emergency. This enables the rapid set up of incident management teams; the production of a strategic response and operational plans; swift deployment of an emergency workforce; securing supplies; and coordination across partners. This has happened for COVID-19 and was used in the Ebola outbreaks in West Africa and Democratic Republic of the Congo. Work is also carried out to organise the provision of essential health services in fragile, conflict, vulnerable and humanitarian settings when there are protracted health crises; recent examples are in Syria and Yemen.

A basic principle is that the generic expertise in the management of outbreaks rests within the health emergencies function in WHO, with the need for specialist teams – whether it is polio, meningitis, cholera, Ebola or other serious outbreaks of disease – to be there to provide the necessary technical advice. The scope of health emergencies will eventually encompass the emergency response capability for polio events. That was the original idea of including health emergencies in the polio transition planning process.

Whilst outbreaks of vaccine-derived poliovirus are still being managed by the GPEI, the WHO Health Emergencies Team has been working with the polio team to integrate their approaches. This has included the use of the emergency operations centres, the emergency grading processes, the emergency response framework, and the emergency standard operating procedures. Thus, there is a clear and comprehensive set of guidelines as

to how WHO works in emergency settings. Also, joint risk assessments have been carried out with the polio team. However, because there is still a strong Polio Programme, and a higher than expected level of vaccine-derived polio events, the core management of these health emergencies has stayed with the GPEI polio teams.

Meantime, polio expertise is being built up or strengthened within the Acute Event Management Unit. Some former polio staff have been hired to work on emergency responses at global, regional and country levels. When the time comes for the Health Emergencies Team to take responsibility for acute polio events, some management capacity will already be in place.

In many countries, the deployment of the core polio team – especially at the subnational level – to support countries' efforts to fight COVID-19, whether that be surveillance, contact tracing or isolation, has provided important learning for future polio emergency joint working.

WHO's COVID-19 Strategic Preparedness and Response Plan identified the need for $1.7 billion for nine months in 2020. Around $1.5 billion in funding was raised, 90% of which went to regions and countries. Under that plan, the pandemic-related work of polio teams (3,700 staff) cost around $60 million.

The COVID-19 experience has helped to consolidate thinking about more integrated public health teams, which are able to do disease surveillance, outbreak preparedness, detection and response, as well as immunisation. It is also likely that a proportion of polio resources will be funded through special COVID-19 allocations during 2021. This will help to operationalise a more integrated polio-related health emergency response, in particular at the country and subnational level.

# SECURING AND EXPANDING VACCINE-PREVENTABLE DISEASE SURVEILLANCE

For decades, there has been a strong interdependence between polio surveillance and other vaccine-preventable disease surveillance. This system has been, and remains, very critical. It is the "eyes and ears" of the immunisation programme, able to see how it is functioning in the control and prevention of vaccine-preventable diseases.

Polio is a vaccine-preventable disease, and its eradication needs other vaccine-preventable disease surveillance in the longer term to be sustained. Surveillance, other than polio, needs polio resources, particularly the infrastructure that the eradication effort has put on the ground and the funding that has flowed through the system. In large part, the funding of comprehensive vaccine-preventable disease surveillance comes from polio eradication. It is vital to maintain the stability of that infrastructure and funding into the future.

The global vaccine-preventable disease laboratory structure has provided infrastructure, expertise, and staff to support the COVID-19 response. It has been instrumental in kick-starting the implementation of COVID-19 diagnostics in many countries. So, the presence of this whole surveillance infrastructure has also been an underpinning foundation for the response to the COVID-19 pandemic.

The subject of surveillance became one of the key focus areas of the polio transition planning process early on. It was recognised that polio resources were subsidising activities in the field and in laboratories vital to preventing and controlling other diseases.

As early as 2003, 131 countries, or 66% of countries globally, had adapted their polio surveillance systems for surveillance of measles and other vaccine-preventable diseases. This trend has continued so that it currently applies to the majority of countries.

A key part of the polio infrastructure is the local surveillance officer. They do active case-finding, by going to health facilities to look for cases. They also conduct supervisory visits to make sure clinicians understand what they should be reporting. They provide training and feedback to those reporters. They attend meetings where they, themselves, are trained and where they review data. Ideally, they should have a close working relationship with immunisation focal persons and with other surveillance officers at higher reporting levels. The surveillance officer does not just look for one disease. They have many responsibilities.

For acute flaccid paralysis detection– a time-honoured system that is used in polio surveillance – approximately two cases per year for every hundred thousand people might be detected and investigated. That takes up only a small part of a surveillance officer's time. For measles and rubella, that detection rate could be anywhere from two to hundreds of cases per year, depending on how good a level of control there is in the country or in the area.

Surveillance officers are also case-finding, investigating and analysing data for all the other vaccine-preventable diseases, such as neonatal tetanus, meningitis, acute encephalitis syndrome,

diphtheria, cholera, yellow fever, and pertussis. Then they are carrying out other communicable disease surveillance, to detect bloody diarrhoea, neglected tropical diseases, dengue, rabies, malaria, tuberculosis, and HIV.

In the polio transition priority countries, surveillance officers are paid for by the GPEI. They are trained by the Polio Programme in surveillance, outbreak investigation and response, data management, analysis methods, and how to conduct an outbreak response. The training is not always restricted to polio matters. The basic principles and methods apply to most communicable diseases. The Polio Programme also pays for investigating the case. It pays for the sample collection devices. It pays for the sample's transportation to a laboratory. It pays for the information systems. It pays for the reporting infrastructure. It also pays for all the active case-finding visits, the supervisor visits, all training, and data review meetings.

There are a variety of reasons why countries maintain vaccine-preventable disease surveillance systems. This can start before a vaccine is even made, where there is a duty placed on public health authorities to describe disease burdens and make decisions about vaccine introduction.

Once a vaccine is introduced into a country, its impact must be measured

and the cost of the vaccination programme must be assessed, funded and monitored. Then there is the need for long-term monitoring after vaccine introduction to detect changes, for example, in the serotypes of circulating diseases (such as influenza viruses), enabling adjustments to vaccines or new ones entirely. Surveillance is also used to identify unreached populations that are not receiving vaccines, understanding why they are inaccessible, closing gaps in coverage, and making sure that they stay closed.

Over the last three years, work has been carried out to create a clear picture of what comprehensive vaccine-preventable disease surveillance would look like and how much it would cost.

The project has adopted the following definition:

> *"Surveillance is the continuous and systematic collection, analysis, and interpretation of health-related data needed for the planning, implementation, and evaluation of public health practice."*

Surveillance supports the *Immunization Agenda 2030*, the global health security agenda, and disease-specific programmes such as polio eradication, the Measles and Rubella Initiative, and the programme to eliminate maternal and neonatal tetanus. It sits within the bigger structure of communicable disease surveillance covering other transmissible diseases, such as HIV and malaria, not currently preventable by vaccination.

Vaccine-preventable diseases include not only diseases with vaccines currently used in national immunisation programmes, or as part of stockpiles, but also diseases that have vaccines in the pipeline. The latter requires baseline surveillance data to inform vaccine development and to define the disease burden before vaccine introductions. Some vaccine-preventable diseases have interventions in addition to vaccination for control, such as water and sanitation improvement measures for cholera and typhoid.

Vaccine-preventable disease surveillance is critical to achieving many global health goals. It is needed to monitor the United Nations Sustainable Development Goals (specifically goal 3.2, to end preventable deaths of newborns and children under five years of age by 2030), and also the WHO's Thirteenth General Programme of Work (often referred to as the "Triple Billion").

The nature of case detection is quite diverse and differs by disease. For example, it is important to find every case of polio, but not necessarily every case of *Salmonella*. Some diseases, like neonatal tetanus and rotavirus, are almost exclusively identified by vaccine-preventable disease surveillance. Some are outbreak-prone and are detected by other surveillance systems. Early-warning surveillance systems, or Africa's infectious disease surveillance and response systems (also known as IDSR) detect syndromes such as acute febrile rash; this could signal an outbreak of measles or rubella or an outbreak of something else.

Event-based surveillance is a type of surveillance that helps to fill the gaps that can exist in traditional surveillance, either identifying diseases not under surveillance or identifying outbreaks that are missed by these other systems. It is sometimes referred to as "rumour" surveillance, where traditional and social media, clinician message boards and other unofficial systems are monitored for unusual signals. For example, a cluster of fever-rash that might not be picked up by the early-warning system or other surveillance systems, or a mass die-off of poultry, could signal the emergence of a new zoonotic disease.

There is also a very highly developed laboratory network to address each of the vaccine-preventable diseases and the laboratory work required. This system is managed by WHO, with the assistance of many partners – especially CDC. Each of the six WHO regions has two or more people whose job it is to manage the regional and national laboratory networks for each disease. For polio, the laboratory network consists of 145 laboratories: national laboratories, regional reference laboratories and global special reference laboratories. The overall network, when the other vaccine-preventable diseases (especially measles and rubella) are added in, consists of more than 800 laboratories.

This system provides annual accreditation of laboratories, introduces new diagnostic tests into the field, organises scientific and management meetings at the regional level, and includes many other activities.

Almost all countries in the world have national case-based vaccine-preventable disease surveillance for diseases like polio, measles and neonatal tetanus. In some countries, there is also sentinel- or case-based surveillance for one, or more, of a variety of diseases. In parallel, there are national systems of notifiable disease reporting from health facilities, and in some countries outbreak-, or event-based, surveillance.

Existing surveillance system platforms in some countries may only include robust surveillance for polio, measles and neonatal tetanus. An early priority is to add vaccine-preventable diseases to these platforms through integrating or adapting existing systems where possible. Notifiable diseases and event-based surveillance support International Health Regulations for identification of diseases such as smallpox, COVID-19, or the next novel pathogen.

The work done as part of polio transition planning has classified countries into four tiers, according to the maturity of their current vaccine-preventable surveillance systems.

**Tier 1** countries are those with limited surveillance capacity, which have a high communicable disease burden and risk, including for polio. Most are low, and

lower-middle-income countries and some are fragile states. They are considered to be able meet the minimum surveillance standards for only five vaccine-preventable diseases. Tier 1 will need considerable external financial support, as well as technical assistance, to enable this to happen.

**Tier 2** countries have some surveillance capacity, but also have a high communicable disease burden and risk; these are mainly lower-middle-income countries. The aim for them is to meet the minimum surveillance standards for at least seven vaccine-preventable diseases. They will need moderate levels of external financing and technical assistance.

**Tier 3** is made up largely of upper-middle-income countries with a lower disease burden and stronger existing surveillance capacity. They will be expected to meet the minimum or enhanced surveillance standards for all priority vaccine-preventable diseases (at least 10) using less external financing and technical assistance.

**Tier 4** countries are those with high surveillance capacity, low communicable disease burden and risk, and higher income. They have little need for external financing or technical assistance.

The components of comprehensive vaccine-preventable disease surveillance include, at a minimum, all vaccine-preventable diseases with global surveillance mandates, diseases that are defined by the International Health Regulations, and other regional and country priorities.

These components need to meet the minimum standard requirement for each disease. They are extensive and include reliable and timely laboratory confirmation; individual case-based data to pinpoint the specific diseases by geographical location in affected groups; timely identification of cases and outbreaks for epidemic-prone diseases; consistent reporting of surveillance data; looking for significant changes in diseases (and strains causing the diseases); and monitoring progress towards global and regional eradication and elimination goals.

The support needed at a global level to achieve this vision includes the development of standards, both for vaccine-preventable disease surveillance itself,

and for information systems, expansion of laboratory networks, technical support for implementation and, finally, advocacy, costing and resource mobilisation. The support functions involve activities at each level. These are needed at country, regional and global levels.

Community surveillance is vital for surveillance in many low- and middle-income countries where health care-seeking behaviour is so complex, and a large majority of the population have no access to health care facilities.

SAGE (WHO's Scientific Advisory Group of Experts) recommends surveillance for all vaccine-preventable diseases, but some countries cannot do surveillance for 20 or more diseases. So, when deciding whether to conduct surveillance for a particular vaccine-preventable disease, countries need to consider whether the surveillance will inform policy and immunisation strategy decisions, and whether they have the resources and capacity to do it. Every country needs to be doing polio surveillance, but does every country in the world need to be, for example, doing varicella surveillance?

The team working on surveillance has sought to understand how much external donor funding might be needed to operationalise a new global strategy for surveillance over the next 10-year period under the umbrella of *Immunization Agenda 2030*.

An estimated $3 billion in external donor funding would be needed over the 10 years, 2021 to 2030. Most of these external funds are required at the country level, the majority by the most fragile, lowest-income countries.

# BIOSECURITY: THE POLIOVIRUS IN LABORATORIES AND OTHER FACILITIES

The poliovirus does not have an animal host, it is a virus with a purely human host. Once it has been eliminated, it is vital to ensure that it does not re-emerge. For a period of time, after circulation has been interrupted, it could come back through natural means if it remains undetected in the environment. That is why ongoing surveillance activities are so important. The poliovirus could also come back by escaping from any sort of facility where it is being held for whatever reasons: vaccine manufacture, research, or maybe, in some cases, just forgotten about from old programmes of research or faecal samples collected for non-polio-related studies.

During the Montreux stakeholder's meeting, in November 2018, one researcher described current work to review all her poliovirus type 2 stocks and to safely destroy them. Some 30,000 samples were being stored in freezers, reflecting research studies that had been going on for years. This is an example of just one laboratory in a very large country. There are many such laboratories around the world. Just one mistake in handling or destroying samples of poliovirus could have catastrophic effects, leading to the reintroduction of wild and/or vaccine-derived poliovirus in human populations. Laboratories, vaccine plants and other facilities retaining such a virus pose a long-term risk that must be managed effectively.

The goal of the containment part of polio transition planning is to achieve and

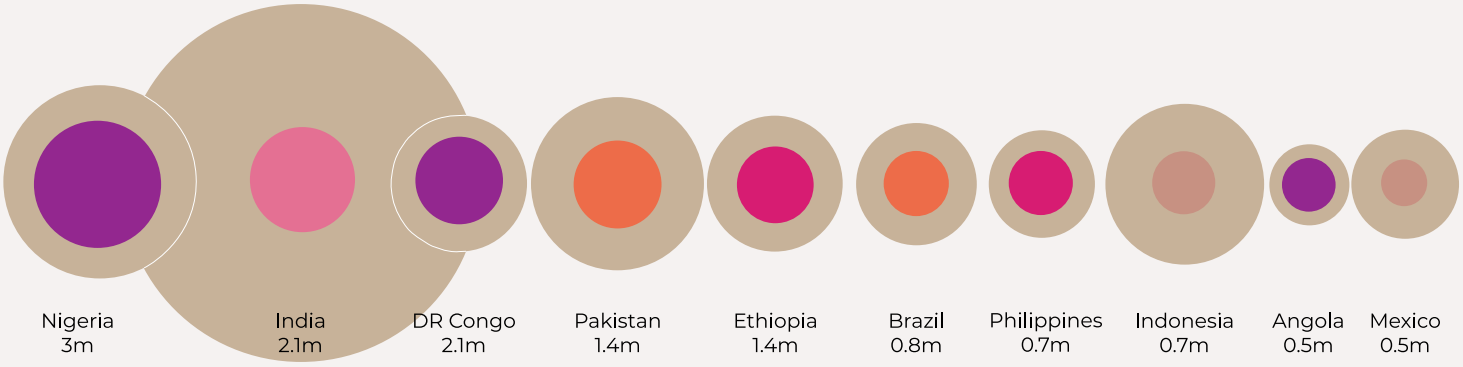
sustain safe containment of polioviruses in laboratories, vaccine manufacturing plants and other types of facilities where the poliovirus is stored, worked upon, or may otherwise be present. There are tasks to accomplish to reduce the global number of facilities that store and handle poliovirus.

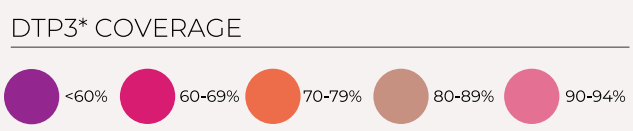
In reducing the global number of facilities, there is a requirement to conduct and complete national poliovirus surveys and inventories to determine where all polioviruses are being held; then poliovirus materials must be removed from facilities that are not going to retain them. Facilities that will continue to either hold, or use poliovirus materials, are designated as Poliovirus Essential Facilities. The designation is made at the national level. A global inventory of such facilities has been maintained and regularly updated. It has been important to avoid the excessive designation of such facilities. Advocacy and communications have been targeted at this.

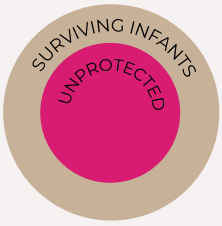
Once facilities have been identified, then these facilities must meet and maintain safeguards that are required nationally and in accordance with a Global Action Plan for Containment (GAPIII). This plan is currently being revised. There is a certification scheme for these facilities, managed by the Global Certification Commission. There is also a requirement to conduct periodic assessments by auditors and the national authorities for containment, and to incorporate containment breach response plans into national emergency response plans.

# DATA INSIGHTS

## Just 10 countries account for 62% of unprotected children
## Seven are priorities for polio transition

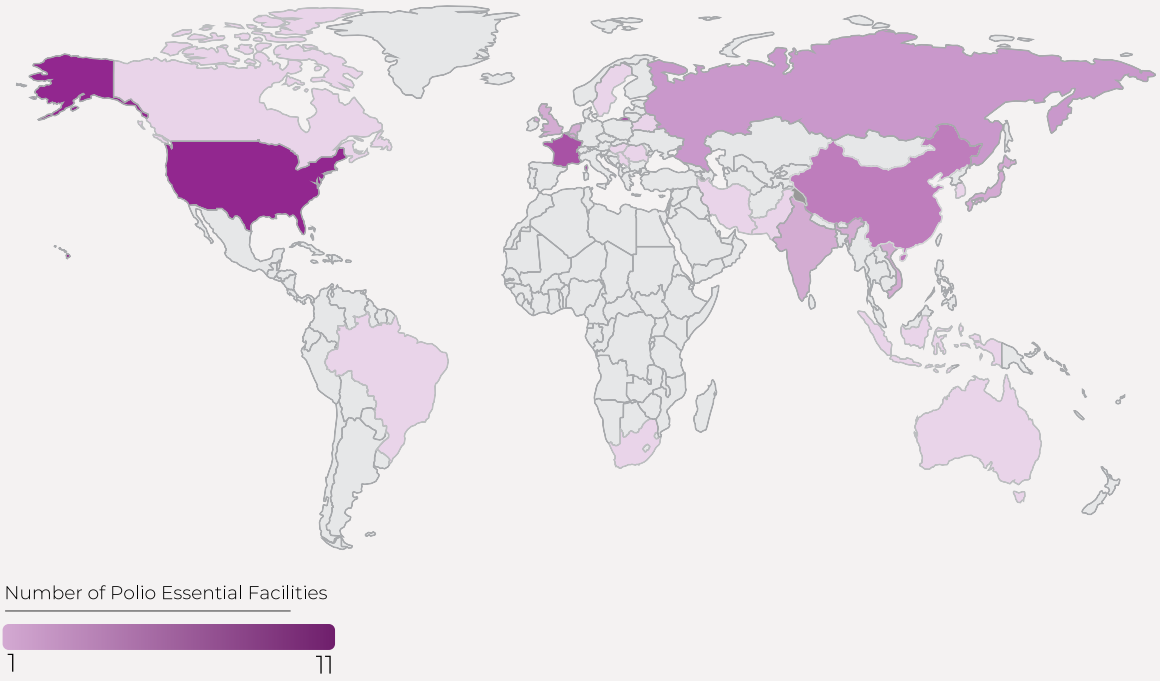



Source: WHO UNICEF Estimates of National Immunization Coverage
Data: July 2020
*Third dose of diphtheria, tetanus and pertussis vaccine

## Progress in rationalising containment of poliovirus: number of designated facilities



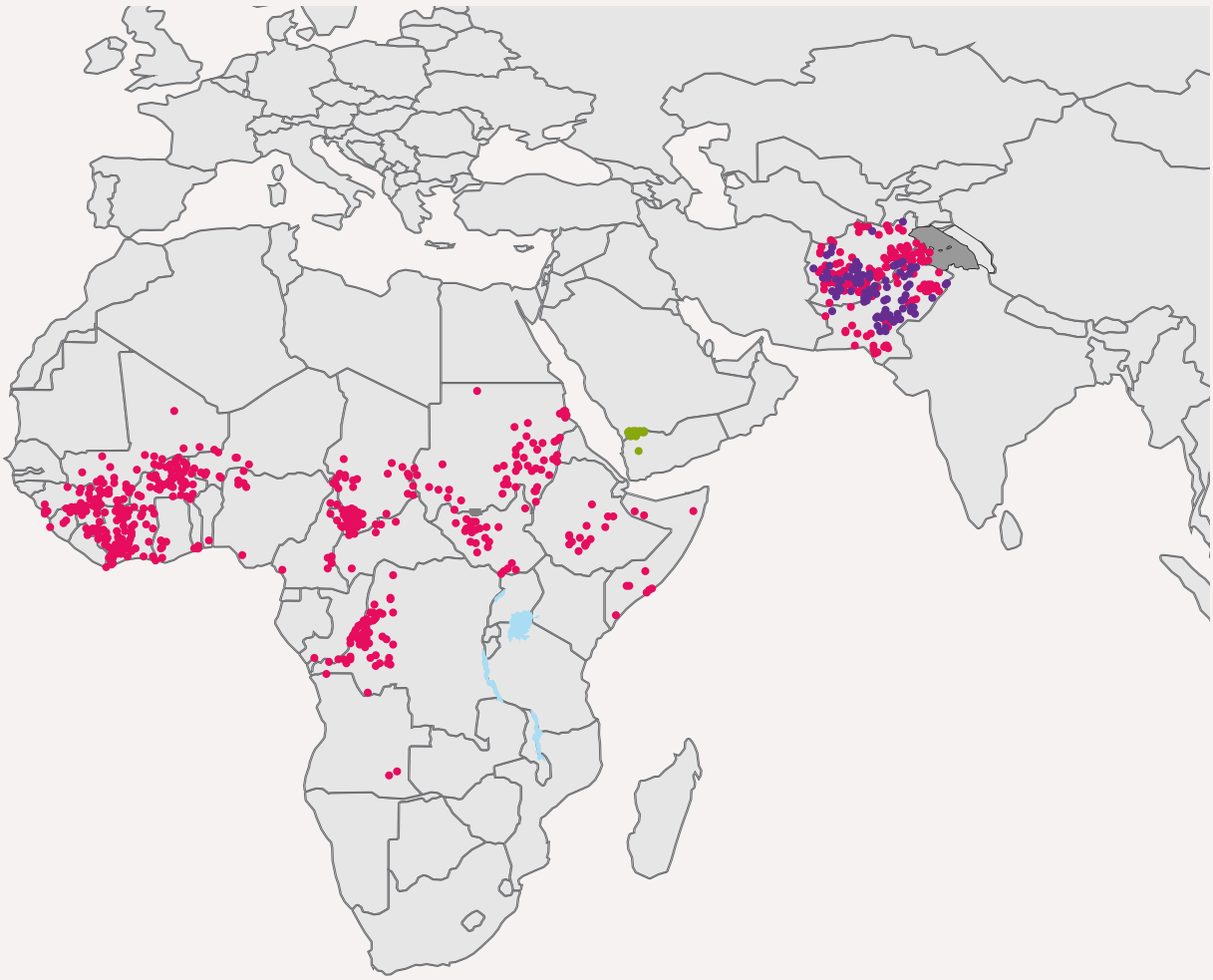

Source: WHO
Data: November 2020

## WHO employed polio workforce*

| YEAR | AFRICA | | | EASTERN MEDITERRANEAN | | | OTHER | WHO TOTAL | | | VARIANCE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Endemic | Non-endemic | Total | Endemic | Non-endemic | Total | Total | Endemic | Non-endemic | Total | |
| 2016 | 316 | 465 | **781** | 93 | 86 | **179** | **152** | 409 | 703 | **1112** | - |
| 2017 | 314 | 417 | **731** | 87 | 71 | **158** | **150** | 401 | 638 | **1039** | **-7%** |
| 2018 | 306 | 357 | **663** | 94 | 76 | **170** | **152** | 400 | 585 | **985** | **-5%** |
| 2019 | 306 | 344 | **650** | 94 | 74 | **168** | **124** | 400 | 542 | **942** | **-4%** |
| 2020 | 292 | 335 | **627** | 95 | 70 | **165** | **129** | 387 | 534 | **921** | **-2%** |
| 2021 | 0 | 605 | **605** | 83 | 65 | **148** | **128** | 83 | 796 | **879** | **-5%** |

Source: WHO
Data: January 2021
*Data on entire polio workforce (including contractors and consultants) are not systematically collected

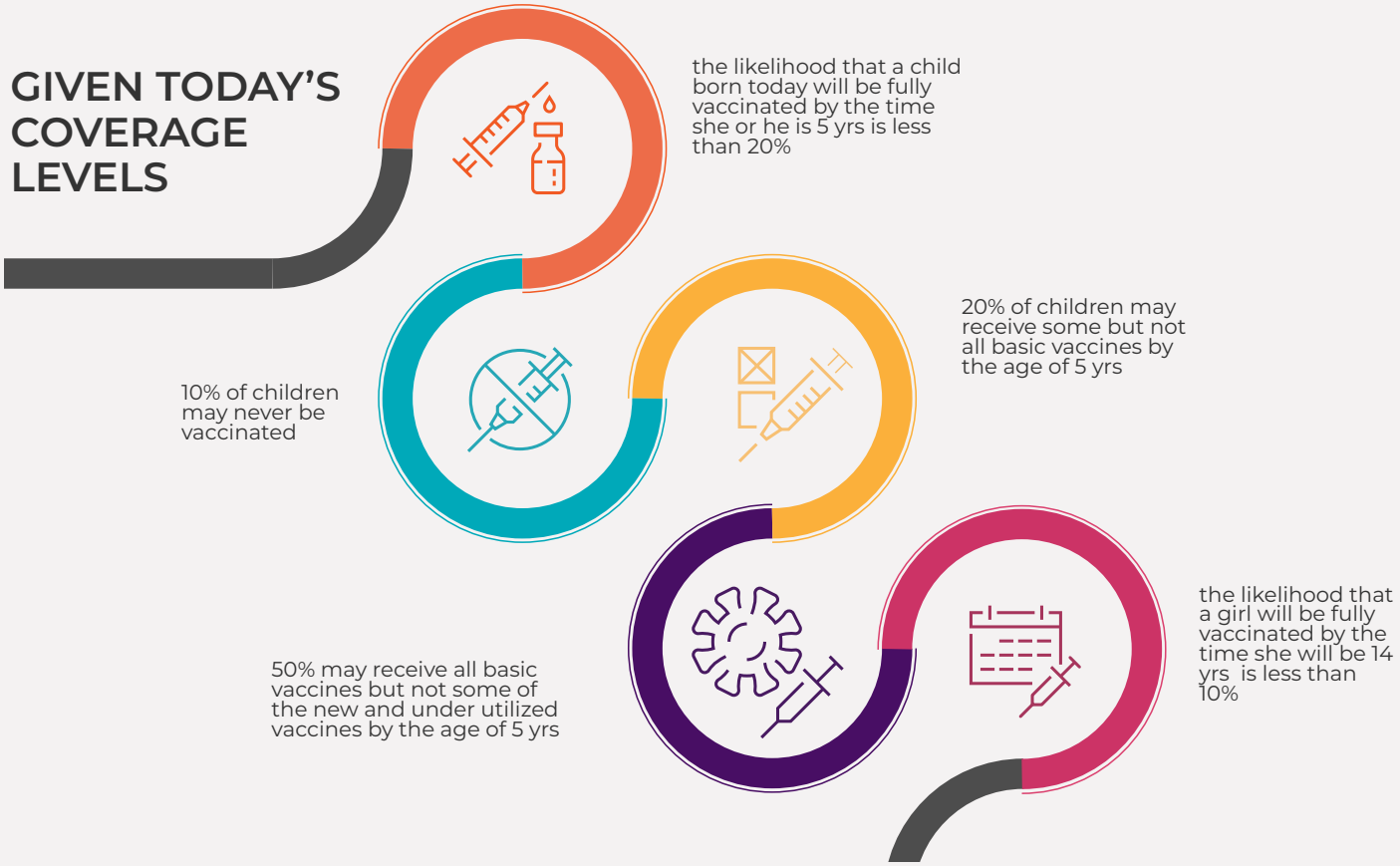
## The rocky road to a polio-free world



- Wild poliovirus case
- Type 1 vaccine-derived polio-virus case
- Type 2 vaccine-derived polio virus case

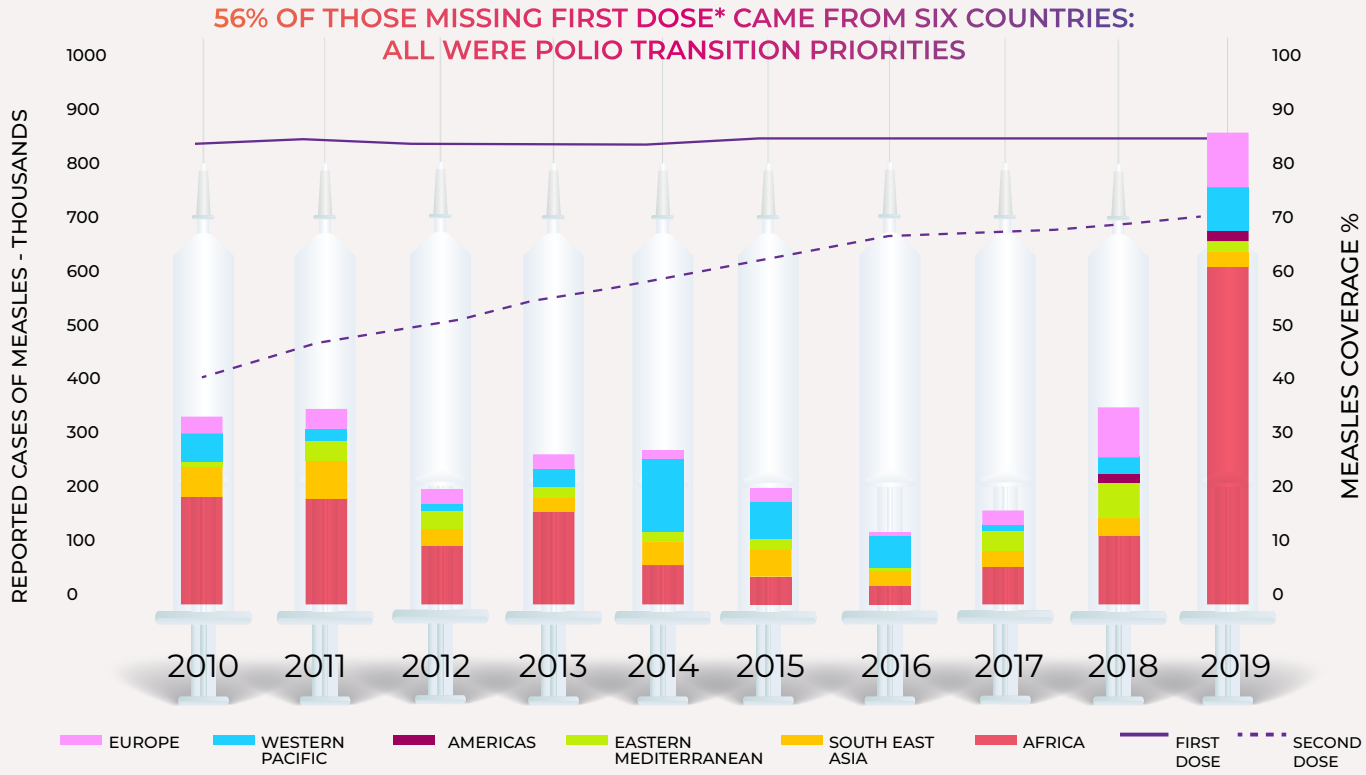
Source: GPEI
Data: January 2020 to January 2021

## Essential immunisation coverage struggling to reach every child



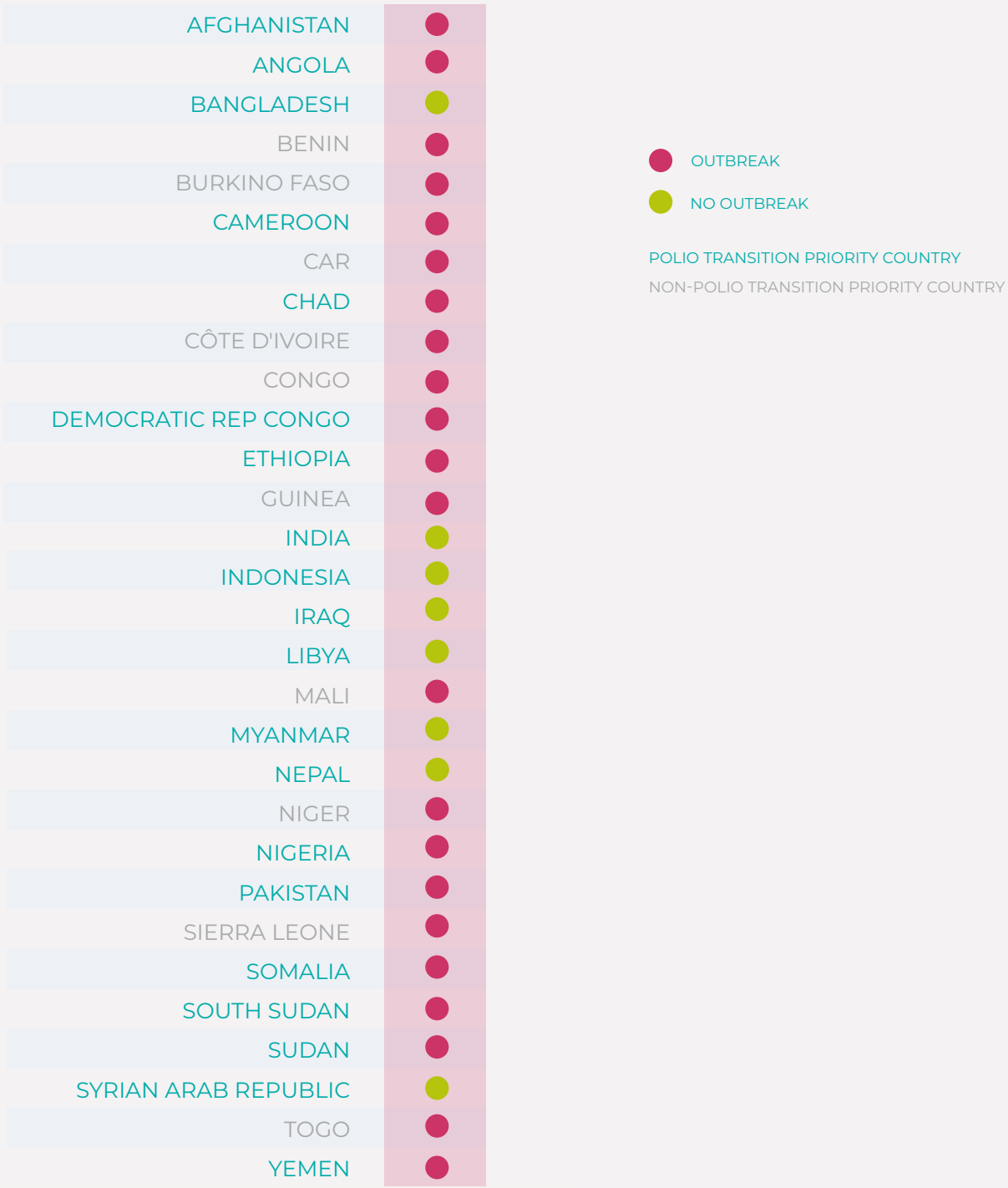

Source: WUENIC

## Worst year on record for measles cases




Source: WUENIC
*2018 data

## Countries with vaccine-derived poliovirus outbreak in the period 26 January 2020 to 26 January 2021




Source: GPEI


# ANALYSIS AND CONCLUSIONS

The polio transition planning process is shaped by the three key objectives set out in the Strategic Action Plan on Polio Transition 2018 –2023 which has the status of being World Health Assembly policy. The objectives are:

- To sustain a polio-free world after the eradication of poliovirus;
- To strengthen immunisation systems, including surveillance for vaccine-preventable diseases in order to achieve the goals of *WHO's Global Vaccine Action Plan 2011–2020*;
- To strengthen emergency preparedness, detection and response capacity to fully implement the International Health Regulations (2005).

The WHO Polio Transition Team told the TIMB that it sees the key objectives as three "pillars" of the required strategic action that are closely linked and interdependent.

# TIMB VIEWPOINT

In reviewing progress on these objectives, the TIMB has noted, in relation to the second objective, that the cycle of the *Global Vaccine Action Plan 2011 –2020* has been completed and, in effect, it has been replaced by a new vaccine plan for the forthcoming decade: *Immunization Agenda 2030: A Global Strategy to Leave No One Behind.*

The TIMB has further noted that, in relation to the third objective, a Global Preparedness Monitoring Board, set up in 2018 under the chairmanship of former WHO Director-General, Dr Gro Harlem Brundtland, and hosted by WHO Geneva, is also independently monitoring this area to highlight critical gaps in preparedness and identify potential mechanisms to address them.

The documentation submitted by the WHO Secretariat in mid-December 2020 for the January 2021 meeting of the WHO Executive Board (148/23) inter alia states: "The objective of polio transition is to mainstream the functions supported through the Global Polio Eradication Initiative into national health systems."

Thus, although there is no fourth key objective in the polio transition plan, in reality, the requirement to assess progress towards countries' financial self-sufficiency and responsibility for the polio-eradication funded health functions is an essential element of the independent monitoring process.

The TIMB works in close liaison with the IMB. The two boards met in the same time period in November 2020. The polio implementing agencies, polio partners, donors and many other stakeholders attended both meetings. The latest and 19th IMB report is now published and covers in-depth much material that is also relevant to polio transition planning.

# IMPACT OF THE COVID-19 PANDEMIC

All aspects of polio transition planning and implementation have been affected by the COVID-19 pandemic. A detailed assessment can be found in the two IMB reports (18th and 19th) published during 2020.

It has caused a major diversion and distraction of leadership and resources at all levels of health policy and operations.

On the positive side, polio assets have been extensively and successfully deployed to fight the new disease. Previously separate teams and organisational structures have cooperated closely and effectively. This will work in favour of the aims of polio transition if the experience is built upon. This has been repeatedly referred to by programme leaders as a "silver lining" of COVID-19.

On the other hand, the pandemic interrupted many essential immunisation services. In March 2020, WHO and UNICEF recommended that they be temporarily suspended whilst interventions were put in place to assure safe resumption, both for people coming for services and for health workers. Thus, there has been decreased access to immunisation services, in part due to physical distancing and transportation reductions, but also because of real concerns by caregivers and health workers about their potential exposure to COVID-19.

There have also been supply-chain interruptions, but this has caused less of an impact. Overall, 91 immunisation campaigns were postponed, in 53 countries, which were mostly for protection against measles and polio. However, the interruption of services did not just affect the polio and measles programmes. It has also hit programmes for cholera, meningitis A, yellow fever and typhoid. These programmes dispense a broad range of antigens and, for parts of their service delivery, use the campaign vaccination method to achieve immunity.

Elements of the immunisation programme have survived the pandemic shock to their system more than others. The most resilient part has been the fixed-site immunisation services, whilst the campaigns and other outreach services have been badly affected. The latter are the services that underpin and fill in gaps in the immunisation fixed-site-based programmes. The result has been immunisation inequity and double jeopardy. Populations at highest risk of missing their essential vaccines are also experiencing a disproportionately large COVID-19 impact. The pandemic has also reduced the surveillance activities which are so vital to the control of polio and other vaccine-preventable diseases.

In November 2020, polio vaccination campaigns resumed in 23 countries, with decisions on their frequency and scope being made by national authorities using GPEI and WHO guidance. The loss of polio programmatic activity because of the pandemic is predicted to lead to more outbreaks of vaccine-derived poliovirus affecting more countries and subnational areas.

The pandemic's financial impact is beginning to play out. At the same time, there is a greater need for polio resources than originally planned, because of setbacks with the polio eradication programme and extra measures needed in resumed campaigns.

Many countries' domestic economies have been badly damaged. They will have even less capacity to take over polio-eradication funded assets through their own budgets. The impact on donor countries' ability to contribute financially is also relevant. Even before COVID-19, many overseas aid budgets were being heavily scrutinised. In future, the case for support for both polio eradication and polio transition will need to be more convincingly made to the governments and taxpayers of these countries.

All this has introduced major uncertainty for the polio transition planning and implementation process. The next six months will be critical in fully understanding the new financial context and deciding what should happen.

# PROGRESS IN SUSTAINING THE PATH TO A POLIO-FREE WORLD

The performance in meeting the first key objective of the *Strategic Action Plan on Polio Transition 2018 –2023* is not going well.

There are still two polio-endemic countries in the world and the number of wild poliovirus cases in each has gone up since the polio transition plan was published. It is likely to worsen further as the effect of the COVID-19 pauses, in mid-2020, start to have their epidemiological impact.

Each year of failure to eradicate polio results in enormous health, opportunity, and economic costs. The budgetary needs of the polio eradication programme are increasing steeply.

The 19th IMB report, published in December 2020, provides an in-depth assessment of the reasons for the programme's failure and proposes action to put eradication back on track.

The measures required are extremely challenging and some have been recommended in previous IMB reports and not properly addressed. No one can now put a reliable timescale on eradication in the last two polio-endemic countries, but the time from interrupting transmission of wild poliovirus to certification is three years (in the presence of good surveillance and no cases). If circulation were interrupted in 2021 (which seems unlikely) the earliest that certification would be achieved is 2024.

In addition, there are large and widespread outbreaks of vaccine-derived poliovirus affecting the regions in which there are polio transition countries. Over the last two years, 13 of the 20 polio transition countries have had outbreaks suggesting that, currently, they are contributing little to achieving a polio-free world. The factors causing these outbreaks include weaknesses in essential immunisation programmes, poor

outbreak management and low mucosal immunity to poliovirus type 2. All, again, are heightened by COVID-19 effects on normal service delivery.

On the other hand, WHO appears to be effectively fulfilling its role in planning for poliovirus containment. This is another vital process in ensuring that polio does not return after circulation of the virus has been stopped. This part of the polio transition programme has provided technical standards, guidance and support to countries in their efforts to ensure appropriate control over retained polioviruses. This has included developing the necessary norms and standards.

WHO is providing technical support for building containment capacity in countries that are retaining polioviruses; there are ongoing discussions and engagement with national authorities to support this.

WHO does not have a mandate to assess these facilities against the implementation of GAPIII. That is the responsibility of the national governments, but WHO provides the norms and standards, and helps to build capacity. The international oversight is provided by the Global Certification Commission with which WHO works closely in all aspects of polio eradication.

# PROGRESS IN STRENGTHENING ESSENTIAL IMMUNISATION

The second key objective of the *Strategic Action Plan on Polio Transition 2018 –2023* deals with the strategic development of the Essential Programme on Immunization globally and within countries.

The TIMB considers that the following necessary actions can be derived from this broad objective:

- Enable essential immunisation to help achieve a breakthrough in interrupting wild poliovirus transmission in the polio-endemic countries;
- Raise, through essential immunisation, levels of polio immunity in polio transition countries and other polio-vulnerable countries;
- Secure stronger levels of community protection from a wide range of other vaccine-preventable diseases;
- Prevent outbreaks of vaccine-derived poliovirus and other diseases such as measles;
- Increase, geographically, the scope of vaccine-preventable disease elimination;
- Ensure continuity and further development of polio-supported vaccine-preventable disease surveillance;
- Embed essential immunisation in primary care services and systems in as many countries and subnational jurisdictions as possible.

At the strategic level, the WHO Department of Immunization, Vaccines and Biologicals has led the production of a new 10-year vaccination plan: *Immunization Agenda 2030: A Global Strategy to Leave No One Behind*. This presents a clear, comprehensive and modern vision for how a dynamic and widely-owned immunisation programme could reduce avoidable illness and premature death as well as improve quality of life and prosperity, especially in some of the poorest parts of the world.

The new plan aims to learn lessons from its predecessor, the *Global Vaccine Action Plan 2011–2020*, which also aimed to be a "North Star" for transformation of immunisation coverage over a whole decade. In its previous reports, the TIMB criticised this plan, commenting that it was, in many respects, ineffective. It contained a high-level set of targets and detailed objectives, but much less in the way of implementation mechanisms.

In 2018, the TIMB asked: "How different will a new global plan be from the current one?" and "Will it have teeth?" The TIMB also pointed to the potential value of polio expertise, programme delivery methods, governance and accountability processes in helping make the new plan more successful than its predecessor.

*Immunization Agenda 2030* proposes new accountability and governance arrangements. Compared to the global Polio Programme, the routine or essential immunisation programme operates in a much more remote manner. It has relatively few WHO or UNICEF staff on the ground undertaking surveillance, carrying out vaccinations, running initiatives to engage communities and other activities involving hands-on, day-to-day management.

From its inception decades ago, the Essential Programme on Immunization decided that it would not put many of its own people on the ground. Rather, the goal was to build the capacity of national teams. It started off by developing training modules for mid-level managers and vaccinators so that they would become the national workforce. The Essential Programme on Immunization continues, to a large extent, to operate like this. When Gavi entered the immunisation field in 2000, it provided money to strengthen health systems, money to pay for the vaccines, but the workforce, the infrastructure itself, has remained national.

This means that the drive to make transformational improvements in essential immunisation coverage through globally coordinated action is somewhat fragile and gives variable results from country to country.

In contrast, the Polio Programme has the ability to steer performance from global to regional to country level in order to achieve its goals. It operates a more command-and-control style, with WHO and UNICEF staff working in partnership with local staff.

On occasions, other polio partners, such as the Bill & Melinda Gates Foundation, have intervened directly, putting their own staff on the ground to become hands-on to secure greater national or provincial commitment, or to troubleshoot an aspect of poor performance. Direct intervention is not always successful, but over time has enabled the Polio Programme to advance towards its eradication goal. Data are used intensively to identify inaccessible populations, find missing children and, thus, target action.

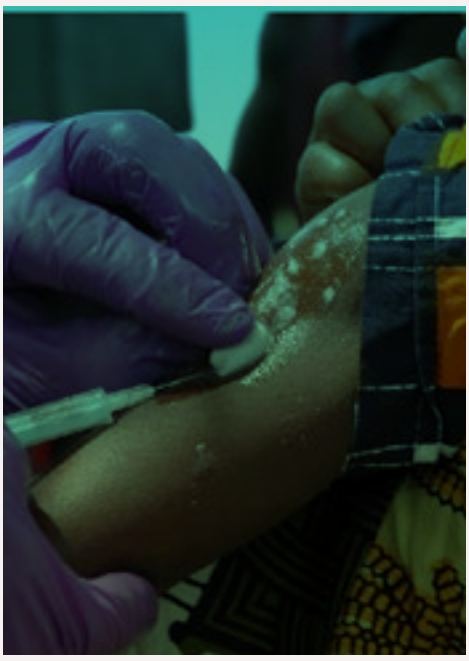
In short, the global Essential Programme on Immunization does not have much of a ground force of its own because its management culture has not worked in this way. Whereas, in the words of a senior member of the GPEI team speaking at a recent IMB meeting: "We do everything, from top to bottom. And we actually insert ourselves into the country itself."

The Polio Programme has a huge amount of data to throw light on which communities are not being vaccinated. It can link this to its microplanning approach to reach children. The Polio Programme has demonstrated good, although not always geographically sustained, performance in reaching the most marginalised populations. The Essential Programme on Immunization has not always been very good at reaching "zero-dose" children. Those children usually live in zero-dose communities. Polio Programme delivery strategies and accountability mechanisms could help to improve results in reducing zero-dose children for other vaccines.

Polio-affected and polio-vulnerable countries are usually weak in their essential immunisation programmes. In most countries, there is not enough spare polio capacity in human resources or time to help the Essential Programme on Immunization to work with the data and use the resulting insights to engineer major improvements.

The way that the new plan, *Immunization Agenda 2030*, creates a style of implementation to actively coordinate performance whilst operating through a largely national workforce will be a key factor in its success.

Whilst these strategic management questions are being worked through, there are potentially immediate operational gains to be made in polio transition through promoting greater integration.



# PROGRESS IN STRENGTHENING INTEGRATED PROGRAMME DELIVERY

Integration is not one of the three key objectives of the *Strategic Action Plan on Polio Transition 2018 –2023*, yet it has become a dominant feature of the work of the different teams in WHO and UNICEF working on polio transition planning. It has also been extensively discussed in meetings of, and with, polio stakeholders and donors.

Rather confusingly, the term "integration" is used to refer to different aspects of polio eradication and transition. Its meaning is not well understood by people outside the Polio Programme "bubble".

Integration is used to describe:

- An immunisation programme in which polio vaccine is given alongside one or more other vaccines;
- A public health programme in which polio vaccine is given with essential immunisation and a package of other health amenities valued by communities (e.g. vitamin drops, water and sanitation measures, deworming tablets, nutrition);
- A public health team combining staff from the polio, essential immunisation, surveillance and health emergencies programmes;
- An internal WHO process of absorbing polio staff and functions into the immunisation or health emergency departments.

The past decade's experience of implementing immunisation

programmes has shown that integrating them into primary health care systems is critical in achieving and sustaining disease elimination and eradication goals. This is a vital goal linked to the vision of universal health coverage, but it is long-term and developmental in nature.

The TIMB welcomes the interim Programme of Work for Integrated Actions (described earlier in this report). It gives a level of structure that has not been there in the past. It provides firmer ground to stand on as formative discussions start about what integration means specifically for the Polio Programme (for both eradication and transition).

Integration of activities is the only way that a number of the polio-essential functions can be sustained. Programmatically, it allows co-delivery of antigens or other health interventions, but, for effective delivery, it enables integration of planning, coordination, joint management, and resourcing of activities.

Integrated delivery of vaccines has been present in some polio-affected and polio-vulnerable parts of the world for some time, but in others it has tended to be ad hoc and opportunistic.

The resumption, after the first wave of COVID-19, of both essential immunisation and polio campaigns, has been an opportunity to extend the range of opportunities for integrated delivery. The primary options for exploring added integration are in the measles and the oral polio vaccine campaigns and in further strengthening essential immunisation to include bivalent oral polio vaccine and inactivated polio vaccine. This is starting to happen but not yet on a large scale.

Polio campaigns, delivered with a preventive purpose rather than to control outbreaks, take place in some 60 countries. Since a great deal of money is spent sending people door to door, there is an argument for a form of integration in which more antigens are carried than just for polio.

The reason that this opportunity to deliver more than just the polio vaccine is not often taken in preventive campaigns, nor during an outbreak response, is that many of the people who deliver the vaccines are volunteers. They do not give injections. They are not authorised or skilled to do so. That is a limitation.

If, in some countries, those preventive campaigns going door to door with vaccination are combined with fixed-site vaccination, then both the polio drops and the injections can be given. In this way, more could be done to combine polio antigens with other antigens, in a greater proportion of campaigns.

There is also the pragmatic consideration that the global health world is entering an environment of limited resources. It will be more difficult to afford to continue with single-antigen campaigns. This does not only apply to polio but, for example, to measles, yellow fever and other campaigns as well.

The most recent initiative in integration set out by WHO's Polio Transition Team is the creation of integrated public health teams. This is building on an existing operational model in some countries, whereby staff from different programmes – polio, essential immunisation and health emergencies – come together into single teams. This started to happen more widely, at country and subnational levels, during the working arrangements for COVID-19. The TIMB was told that it is intended to implement this within country offices during 2021.

This seems to be a successful way of expanding an integrated approach, but it is important to be aware of the danger of it becoming another form of vertical delivery sectioned off from broader primary care; it must remain a goal to transfer to government management later.

# PROGRESS IN CREATING A MODERN GLOBAL INTEGRATED COMMUNICABLE DISEASE SURVEILLANCE SYSTEM

Surveillance is an integral part of the second key objective of the *Strategic Action Plan on Polio Transition 2018 –2023*. From the beginning of the work on polio transition planning, it has been prominent in discussions.

The first TIMB report identified seven tracks of work for the polio transition process, including:

> **TIMB July 2017, Track 3:** Maintaining, coordinating, and further developing the global systems and networks of surveillance and public health laboratories to provide world-class support to control communicable disease: i.e. early recognition, prevention, outbreak response, and evaluation of interventions.

Securing continuity of the surveillance for polio and for the other vaccine-preventable diseases (that the polio surveillance system cross-subsidises) is a critical success factor for polio transition. It is essential also to see the value of surveillance information in its very clear linkage to immunisation programme decision-making, so that vaccines and their delivery strategies are as effective and efficient as possible. A surveillance system must be clearly tethered to a responsive disease control programme.

This surveillance infrastructure has been built, largely through polio funding. In the TIMB's opinion, it has demonstrated excellent value for money.

Given the extension of the GPEI's role and funding as a result of the delay in polio eradication, there is no

immediate threat to these surveillance assets. However, it must be a priority to ensure that they are not lost or weakened as national governments start to take over responsibility and funding, or with the serious pressures on the GPEI's planned budget or the WHO's budget for polio transition planning.

The work described earlier in this TIMB report shows good progress in designing a new more comprehensive and integrated vaccine-preventable disease surveillance system. This work should be strongly backed. If proper surveillance is to be sustained and developed further, well beyond the last case of polio, then important, transparent policy and financial commitments and guarantees will need to be made.

There have been important developments in communicable disease surveillance, running together with the global polio transition planning process. For example, in WHO's Africa Region, new surveillance elements have been built on the Polio Programme's core activity of identifying and investigating cases of acute flaccid paralysis. A much more comprehensive communicable disease surveillance programme now includes case-finding in relation to measles, neonatal tetanus, yellow fever, cholera, meningitis, bloody diarrhoea, rabies, and animal bites.

There are other major development activities in communicable disease surveillance involving global health bodies. They offer opportunities, new sources of funding, outside-of-the-box thinking, and potential synergies with the work on surveillance for vaccine-preventable diseases, and for the broader agenda on global health security.

One example is work going on within the Global Fund to integrate surveillance across its three diseases: tuberculosis, malaria and HIV. Another is a surveillance initiative by the World Bank. This is the Regional Disease Surveillance Systems Enhancement (REDISSE) Project and seeks to strengthen national and regional cross-sectoral capacity for collaborative disease surveillance and epidemic preparedness in West Africa and, in a crisis or health emergency, to provide an immediate and effective response.

In reality, more than two decades have been spent developing what is still an incomplete

form of comprehensive vaccine-preventable disease surveillance. The design and functioning of surveillance systems in some countries is still quite rudimentary, relying on pieces of paper moving from the laboratory to the surveillance units. This is so in countries where hundreds of millions of dollars have been spent, over the years, on vertical diseases programmes.

The surveillance infrastructure does include laboratory networks to support work on combating polio, measles, rubella, yellow fever, Japanese encephalitis, invasive bacterial diseases, rotavirus and the like. It is a global good, but it still has weaknesses. It has been of enormous value from a global health security standpoint, in dealing with outbreaks of Ebola, Marburg virus, avian influenza, and many other emerging disease threats. This infrastructure has been called on repeatedly and will continue to be called upon, just as it is now for COVID-19.

Over the next decade, surveillance needs to have a reliable, predictable and well-funded system that can systematically address weak components.

The developmental work undertaken on surveillance, as part of the polio transition planning, has the vision of a sustainable, high-quality surveillance system supported by strong laboratories that detect and confirm cases and outbreaks. It will generate data to guide outbreak prevention and response, immunisation programme management and vaccine policy, all of which serve to decrease the burden of vaccine-preventable disease as efficiently and as effectively as possible.

Work is being undertaken to determine how much comprehensive vaccine-preventable disease surveillance will cost over the next decade. Costs include continuing to pay for all the surveillance medical officers and the network of laboratories for various vaccine-preventable diseases at the country, regional and global levels. Some parts of this infrastructure can be transitioned to the country level over time, but there is a great deal of superstructure, particularly at the regional and global levels, that has to continue to be funded by WHO and global partners that are involved in immunisation.

The concept of surveillance championed by the TIMB goes beyond simply seeking continuity of polio-programme subsidised assets and a skilled workforce in order to ensure the detection of poliovirus emergence after global interruption of transmission. It also goes beyond retaining the role in relation to a handful of vaccine-preventable diseases

(notably measles). It contains the idea of broadening the range of diseases and markers of infection to be included, integrating the many ways that data are captured; developing standards and interoperability; and capitalising on digital methods of identification, analysis and communication.

This remains a huge opportunity for global health: to do something that has not been done before and produce a global, comprehensive, integrated surveillance system rather than preserving the fragmented arrangements that are now in place.

The need for a modern, globally-designed and globally-facilitated system of surveillance could not be more obvious with the second pandemic of the 21st century threatening populations around the world, stressing health systems globally, devastating economies and dominating news bulletins. Whilst surveillance has been, and remains, crucial to tracking and controlling COVID-19, it has been a rough and ready process with weaknesses in standardisation, coordination and ease of data flows.

It has been demonstrated beyond doubt, though, that surveillance is no longer purely a specialist interest within the public health and academic communities, it is the business of prime ministers and presidents. That message was becoming clear earlier in the 21st century with outbreaks of SARS, Ebola and the first pandemic of influenza for 40 years (H1N1 or "swine flu"). The emergence of new threats and the darker side of science (with the need to prepare for the threat of bioterrorism as well as natural causes) means that communicable disease surveillance should have the highest of profiles in global health security debates.

Going back five years, the use of the term "surveillance" in a political environment with health ministers, with the general public, with the media, would have had very little resonance. It would have been seen as a relatively obscure term. It is a very technical area. It is a behind-the-scenes activity. Even though it is undeniably important for measuring programme performance for immunisation systems at the country, regional, and global levels, and an essential asset, it is not well understood. Particularly, non-technical donor organisations and decision-makers do not always see its value when trying to decide how to deploy their limited funds.

COVID-19 has changed this. Suddenly many people understand the relevance of knowing where the cases are and how they are changing. Television news bulletins around the world are showing surveillance data on their screens every night. Moreover, they see decision-makers, usually at the presidential or prime ministerial level, reacting to those surveillance data. On the other hand, the words "vaccine-preventable disease surveillance" raise in people's minds the image of childhood diseases. Of course, those diseases – measles, rubella, meningitis, and others – are taken seriously, but they tend to be seen as the cost of being in a low-resource environment with multiple health problems and weak health care systems.

The vision of global comprehensive communicable disease surveillance needs to be even more ambitious if it is to address all important disease threats and risks holistically. Malaria and HIV are not vaccine-preventable diseases, at least not yet. Emerging diseases with pandemic potential are not, initially, vaccine-preventable.

The project also needs to take advantage of the most modern technology. Pathogen genomics is now an established field of science in many parts of the world and is especially important for emerging diseases. Integrating genomic surveillance within basic epidemiological surveillance will be more costly but will bring rich benefits in the control and prevention of communicable diseases. Its importance is a current reality, as new variants of the pandemic coronavirus need to be rapidly tracked, characterised and matched to vaccines.

The incorporation of digital technology, including artificial intelligence, will also raise the capability of a global surveillance system to a different level. Early attention should also be given to electronic case reporting and interoperability between different regional, national, subnational and research-based surveillance systems.

A comprehensive vaccine-preventable disease surveillance system of the kind being developed as part of polio transition is a welcome and important step forward in improving the quality of surveillance worldwide. However, a further step needs to be taken so that all current major communicable diseases and ways of detecting potential future threats to global health are incorporated. The devastating human and economic costs of failing to prevent pandemic threats, recognise them early and control them should lead to little dissent about the need to invest in surveillance.

# PROGRESS IN STRENGTHENING EMERGENCY PREPAREDNESS, DETECTION AND RESPONSE CAPACITY

The third key objective of the *Strategic Action Plan on Polio Transition 2018–2023* has been advanced by the work undertaken to fight the coronavirus pandemic. The WHO Health Emergencies Team at headquarters and in the regions and countries has been fully occupied with it. Polio assets, staff and working methods have played a big and important role in the response on the ground.

One feature of the response has attracted very little comment. When the COVID-19 pandemic was declared, many borders were closed immediately. So, in some of the countries, the polio infrastructure was the only readily available surge capacity that existed. People could not be brought from outside. The pandemic is an extreme occurrence, but it highlights an important point about countries' resilience. If there is no comprehensive dedicated health emergencies workforce on the ground this creates a vulnerability with some kinds of event.

The health emergencies platform is now highly capable in dealing with vaccine-preventable disease

outbreaks; around 60% of the world's health emergencies fall into this category.

The Health Emergencies Team has gained great experience across a wide spectrum of events, many in very poor and fragile countries. The generic lessons from responding to so many such events, combined with technical advice from polio experts, should provide high-quality capability in managing polio events in the future. It will bring both experienced eyes with new skills and a different perspective.

The Health Emergencies Programme has relatively few people on the ground. Rather than maintaining a permanent workforce, the programme usually puts people into place only when there is an emergency. They go to a country to deal with an outbreak, they staff-up with a temporary workforce and then the staff are shed once the problem is resolved. It is different with a protracted emergency, for example, in a country like Yemen where staff are in place for a long time. A question has been: to what extent do they need to have a permanent presence, at least at some level in some countries?

Subject-matter expertise is essential to all health emergencies responses. The Health Emergencies Programme deals with the generic aspects of the response but it needs specialists to advise on the specific disease or other health problem. This will be the case for all polio events in the future. This comes back to the polio infrastructure. A major benefit of having a well-staffed polio ground force, especially at subnational level, penetrating down to district, community and household levels, is the availability of a ready-made response capacity. When a health emergency happens, the timing of the first response is vital.

That workforce presence is not guaranteed once polio money is withdrawn unless alternative funding arrangements are made to secure its continuity. Some of the polio capability – such as the district surveillance officers, the regional laboratory systems, and the microplanning – is absolutely essential to retain, and will in any case be retained for ongoing polio activities and the wider essential immunisation programme. Judgements will need to be made about how much of this needs to be part of a dedicated national and subnational health emergencies framework. In countries such as Democratic Republic of the Congo, Somalia, and Yemen it would be disastrous to simply remove this capacity, downsize the infrastructure and revert to simple technical assistance programmes.

The spread of vaccine-derived polio outbreaks is the current challenge. It has become vitally important to close them down quickly and bring the situation under control. Their costs and the demands on polio staff are huge. A novel oral polio vaccine that, in trials, did not produce a paralysis-causing mutation, is being introduced in 2021. It has the potential to be transformative in extinguishing outbreaks, but good outbreak management will still be needed.

Responsibility for dealing with these outbreaks and other untoward polio events is being left with the GPEI for now, rather than moving it to the health emergencies function in line with the polio transition strategy.

The response to some polio outbreaks has made use of the health emergencies platform. In practical terms, however, the collaboration between the polio and health emergencies teams at the global level exists mainly on paper. The same mechanisms, processes, guidance and protocols – to call for an emergency, to analyse the data and track progress – are shared.

The combination of workforces has been very limited so far because it only happens where there are health emergencies staff on the ground. In some very complicated countries,

there are such staff. Some of the integrated public health teams are responding to polio events jointly.

In the period after global interruption of transmission, the occurrence of any polio "event" will be a public health emergency requiring an urgent response and definitive resolution. Such events could include the discovery of a hidden wild poliovirus, an outbreak of vaccine-derived poliovirus, or the escape of poliovirus from a research laboratory or vaccine manufacturing facility.

Should the polio transition plan – that health emergencies teams will take over the detection and management of polio outbreaks – be put on ice until they have been damped down by the novel oral polio vaccine? Or until COVID-19 is over?

For the health emergencies teams to take the lead in dealing with the current level of vaccine-derived polio outbreaks would be a huge undertaking. It would precipitate them into firefighting, whereas their proper disease-specific role (notwithstanding the exceptional case of COVID-19) is more rounded and concerned with preparedness, surveillance, and detection, as well as responding to an outbreak. That is easier for them to do because that is what they do all the time.

# PROGRESS IN ACHIEVING NATIONAL SELF-SUFFICIENCY

The detailed description of each of the 20 countries' situation is described earlier in this report, with the caveat that it has not been possible to validate the assessment of progress through visits and discussions on the ground.

The persistence of wild poliovirus transmission in the endemic countries and the threat to surrounding countries has had an impact on both the progress and the momentum of polio transition work. All of the priority countries have been hit by the COVID-19 pandemic and most by other disease outbreaks, including vaccine-derived poliovirus, measles, and other emergencies. A huge drop in surveillance indicators due to COVID-19 has been observed everywhere.

The status of country polio transition planning must be seen in a regional context. The 20 priority countries are in three different regions, each of which is in a very different stage of polio eradication. This has an impact on progress and the way polio transition is perceived by the countries' governments.

The South-East Asia Region was certified free of polio in 2014. For more than a decade, surveillance, immunisation and polio functions have been integrated. The establishment of this integrated infrastructure, and its duration of operating successfully, has influenced the way that governments view polio transition planning and how to deliver successful outcomes.

Taken as a whole, this region is the most advanced in polio transition planning. Although each country is at a different stage in transition, all have credible plans and, in most, implementation is underway. India is the furthest forward and most of what are called "polio-essential functions," such as laboratories and surveillance functions, have been

transitioned to the government, which is already putting its own money into it. For the South-East Asia regional implementation context, there is no real doubt about the governments' ownership and commitment. They are mostly in place. Nor is there any lack of oversight and drive from the regional office itself. The plans seem solid and well thought through. The main concern is financial sustainability. None of the plans, even India's, yet have a long-term horizon.

In contrast, the Africa Region was only certified free of the wild poliovirus six months ago. The Africa Region is where most of the global polio assets and people are located. Outbreaks of vaccine-derived poliovirus and other vaccine-preventable diseases are having a major impact and there is very heavy dependence on the polio funding to deal with them and other polio-essential functions.

The Africa Region cannot afford to suffer any reversals in the final stages of polio eradication, having been certified wild poliovirus-free so recently. This means putting heavy emphasis on raising polio immunity levels comprehensively and sustainably across a wide range of national and subnational geographies. In turn, this will involve delivering excellent standards of surveillance and rapidly strengthening essential immunisation systems.

This will be a huge challenge given that many of the countries have weak and fragmented health systems as well as serious disease outbreaks. All will be dealing with further waves of COVID-19 and the need to create a vaccine programme to combat it.

The countries in the Africa Region all have polio transition plans. It is not clear to what extent they are actually being implemented or are implementable.

There is little prospect of any substantial move forward in the transition of assets and funding responsibility to countries in this region. In addition, Chad and South Sudan are very fragile and are likely to need longer-term external funding in order to continue to provide vital services. Lack of progress in this region is a matter of concern.

On the other hand, this is a region in which a conventional polio transition plan may not fit well with the wide range of health needs and complexity of the health challenges faced by many countries. At national and subnational levels in the Africa Region countries, essential immunisation and polio are already integrated, although at the WHO regional office level there are separate immunisation and polio leads.

Rather than simply developing this integration further in isolation (which risks giving it a "vertical" ethos), there are strong arguments for progressing polio transition within a wider programme to build a primary health care system. This is a debate that the WHO regional office is leading. It is an approach that is very dependent on creating a clear service design matched to each country's health and social context. It will need external resources and extended technical

support to each country. The largest country in the region, Nigeria, is already taking this path.

Unlike the other two regions, the Eastern Mediterranean Region has the world's last two polio-endemic countries: Afghanistan and Pakistan. The region contains about 48% of people worldwide who need humanitarian systems, yet it has just 9% of the world's population. The polio transition priority countries in the Eastern Mediterranean Region include some that are fragile- and conflict-affected and in need of longer-term support from polio partners and donors.

All priority countries in the region have been instructed to share plans on how they aim to restore surveillance quality to its pre-COVID-19 status. Immunity to poliovirus type 2 is low. All priority polio transition countries have a vaccine-derived poliovirus outbreak, except Syria. It would be extremely risky to force the pace of transition in Syria, Yemen and Somalia. Progress is being made in some countries, but the scale and complexity are very challenging due to multiple concurrent crises.

Meantime, across all three regions and their priority polio transition countries, the changing financial context is raising serious concerns for the pace and feasibility of national self-sufficiency and hence the viability of country plans themselves.

Firstly, the planned GPEI budget is facing unprecedented pressure. The failure to meet deadlines for polio eradication in Pakistan and Afghanistan has imposed additional financial constraints. The explosive and widespread outbreaks of vaccine-derived poliovirus affecting Africa and beyond were not planned or budgeted for on their current scale. This is forcing the Polio Programme to withdraw its support more rapidly from the countries that are no longer polio-endemic. Also, conducting polio campaigns in a COVID-19 environment will be much slower, will need many more precautions (such as personal protective equipment), and, as a result, will be more expensive.

Secondly, the COVID-19 emergency has had a severe impact on national economies and exacerbates the existing


instability and fragility in many priority countries.

This potentially alters the timeline for polio transition. The plan was for countries to "graduate" from GPEI funding, starting in 2024. Now, it is likely that other sources of financial support will have to be found for core capacities that have been polio-eradication funded for a long time. This could be necessary as soon as 2022. That leaves just one year to get countries ready to transition their polio-supported core capacities and move them either onto other programmes or find alternative sources of support, including domestic funding.

WHO headquarters has advised all its regional offices that they must work out which polio-supported functions need to be sustained from 2022 and to embed them into other programmes (such as essential immunisation and health emergencies). This allows a year to find sources of financing to sustain those functions so that polio-programme supported wider public health services do not abruptly collapse.

A year may be insufficient time for countries to review their plans and work out a revised approach, given COVID-19 and other crises. The immediate consequences of the depletion of the polio budget may be mitigated by the special funding for the pandemic. WHO has brought in about $1.5 billion to respond to COVID-19. Members of the polio workforce were the first responders, and many are continuing to work on it. So, in places where GPEI funding will need to be withdrawn or reduced, it is possible that COVID-19 funding can be a bridge to sustain those people and those functions until a long-term source of support and a future home for them can be found.

WHO's core budget for polio transition planning (this is discussed in more detail in a section below) will also play a major part.

# PROGRESS ON THE FUTURE OF THE GLOBAL POLIO ERADICATION INITIATIVE

Had wild poliovirus circulation been interrupted, as seemed imminent in early 2018, the global coordination and management of the steps necessary to move on to a completely polio-free world would, by now, have passed into the hands of the WHO Essential Immunisation and Health Emergencies Teams.

The former would have been responsible for sustaining high-quality surveillance, maintaining high levels of polio immunity, and strengthening immunisation programmes at national and subnational levels.

The latter would have been responsible for dealing with outbreaks.

National governments would have assumed responsibility for, and funding of, the polio staff and infrastructure. WHO and some external donors would have provided bridging funding where needed and longer-term support for fragile countries where there is little prospect of national self-sufficiency. The GPEI as an organisational entity would have started its passage to closure after more than 30 years of operation.

Wild poliovirus circulation was not interrupted as scheduled. Unanticipated, explosive, large outbreaks of vaccine-derived poliovirus started to occur. So, the GPEI's tenure was extended.

As an adaptation to the situation that polio eradication had regressed whilst polio transition was progressing, an important change was made to budgetary arrangements.

Previously, the entire polio budget that came to WHO through GPEI was off-budget; it was not reflected in the mainstream WHO budget. It was reported upon, but as "polio funding", and separately to the core base budget of WHO. No money came from the WHO core budget into the Polio Programme. The two were entirely separate. Yet, the polio budget held within WHO represented something like 18% of overall funding coming to the organisation and almost 25% of WHO staff are funded by GPEI. This carries considerable risks to the WHO in its operational capacity.

The World Health Assembly endorsed a policy to increase the WHO base budget, starting in the 2022–2023 biennium, by a more significant amount. This does not mean that the funding to WHO increases. The polio component, in principle, reduces so that the WHO's polio budget will decrease in proportion.

The rationale for the change in budgetary arrangements is consistent with the aims of the polio transition planning process. Some of the core public health functions that have been financed in polio transition countries by polio money are needed in the long term. Activities such as surveillance, preparedness, and information gathering need to be sustained in a number of countries which are now free of polio. The change will mean that the GPEI should no longer fund these activities in a number of polio-free countries. Since there are countries that are not ready or able to take over the funding domestically, the WHO core budget can do this until self-sufficiency is possible.

The move to reduce the polio budget going into WHO and increasing its base budget does not affect GPEI funding in the two endemic countries, nor funding for the global laboratory network, nor the funding that goes to the countries to support outbreak response, including strengthening of surveillance. So, a large amount of polio funding will remain under the control of the GPEI in order to avoid risk to key areas of the Polio Programme.

The shift to base budget shows WHO's commitment to support these critical functions, as GPEI support phases out. So, until the governments take over these functions with domestic funding, or mobilise external resources from donors, WHO has to provide the support, especially for the surveillance and immunisation functions.

In a worst-case scenario, where the WHO is not able to raise the money to fill the core budget, and since the GPEI budget for the next four years remains at the same level, the GPEI could help to fill those gaps.


# MAKING DECISIONS AT THE CROSSROADS

Given that changes, including the creation of a WHO core budget, have been made to align with the implementation of polio transition and start to work on a future in which the polio functions are delivered by national public health programmes and key "non-polio" WHO departments, the questions arise: "What should the role of the GPEI now be?" and "Who should have control over the money and the output?"

The GPEI currently remains "all singing, all dancing" and controls almost all aspects of the Polio Programme. Other spearheading polio-eradication partners share in policy decisions on how the programme is delivered; some are very heavily involved with country programmes. This strong management style, with tight oversight, pushing performance and very hands-on, is well understood by everyone.

At the moment, WHO's Director of Polio Eradication has authority over the budget that comes into WHO for polio control.

Looking at the entire current polio context, it could be argued that the GPEI's role should be to focus entirely on the two polio-endemic countries and resolve the serious barriers to eradication there. This would leave the challenges of clearing up the outbreaks of vaccine-derived poliovirus to the health emergencies function (with polio-expert advice) and the strengthening of polio immunity and surveillance to the essential immunisation function.

It would be a bold and radical approach to do this now. It would reconcile the conflict caused by delays in pursuing definitive steps on transition because eradication had faltered.

There would be immediate logistical difficulties. The WHO Immunisation, Vaccines and Biologicals Department, which leads on the global Essential Programme on Immunization, is heavily absorbed with the challenges of coronavirus vaccine availability and roll-out. The WHO Health Emergencies Department is dominated by the ongoing handling of the global response to COVID-19.

Notwithstanding the logistics of making such a shift, the TIMB is aware of different views on the merits of doing so.

There are those in the polio eradication community that would be very concerned about removing the "polio control" budget and cutting staff. They feel that an alternative non-GPEI management model would remove the direct pressure and performance-management style necessary to rapidly build polio resilience, especially across Africa where there has been great vulnerability to polio in the past.

There are those in the wider polio community that take a different view and feel that it is taking too long for these functions to become much broader based and more integrated and less focused on polio. They also fear that uncertainty may lead to the loss of staff with valuable skills and knowledge – vital capacity for the overall success of polio transition.

At some point, a policy decision will need to be made about whether the GPEI role should remain all-encompassing until wild poliovirus circulation is eliminated or become more circumscribed before then. This leaves the polio transition planning process standing at a crossroads. Many of the building blocks for implementation are in place. New global management and coordination teams – particularly in essential immunisation and health emergencies – are in a position to broaden the scope of their work to do this.

Yet, the continuation of all the traditional GPEI functions, consequent on the failure to remove the final two countries from the polio-endemic list, is causing uncertainty about respective responsibilities and the timing of their transfer. Very few polio transition priority countries are yet in a position to take over their polio assets and staff. But WHO's creation of a core budget for this purpose will help to bridge the gap.

Key policy decisions are now needed about which aspects of polio transition should be fully implemented and on what timescale.

# RECOMMENDED ACTION

## 1. Policy decision regarding global management and coordination

A policy decision is urgently needed whether the GPEI should continue to manage and coordinate all polio functions (eradication, outbreaks, building polio immunity, surveillance, containment) or whether a subset of functions should move permanently to other global management structures to advance polio transition.

## 2. Urgent post-COVID-19 review of all national plans

Each of the 20 polio priority transition countries' plans should be reassessed in the light of COVID-19 and three high-level summary descriptors produced quickly: a) an indicative annual budget for the next five years showing what would be necessary to secure continuity of polio-subsidised services; b) a brief synopsis of how the components of the services will be integrated and organised; and c) a short statement on whether the government will assume responsibility for management and funding the essential services and, if it will, when.

## 3. Expansion of integrated public health teams

The model of integrated public health teams (polio, essential immunisation, surveillance, health emergencies) at the country level should be expanded further; care should be taken to ensure that it does not develop a “service bundle” or vertical programme ethos that would make it difficult to integrate later with government or primary care services.


## 4. Country by country staff capacity-building plan

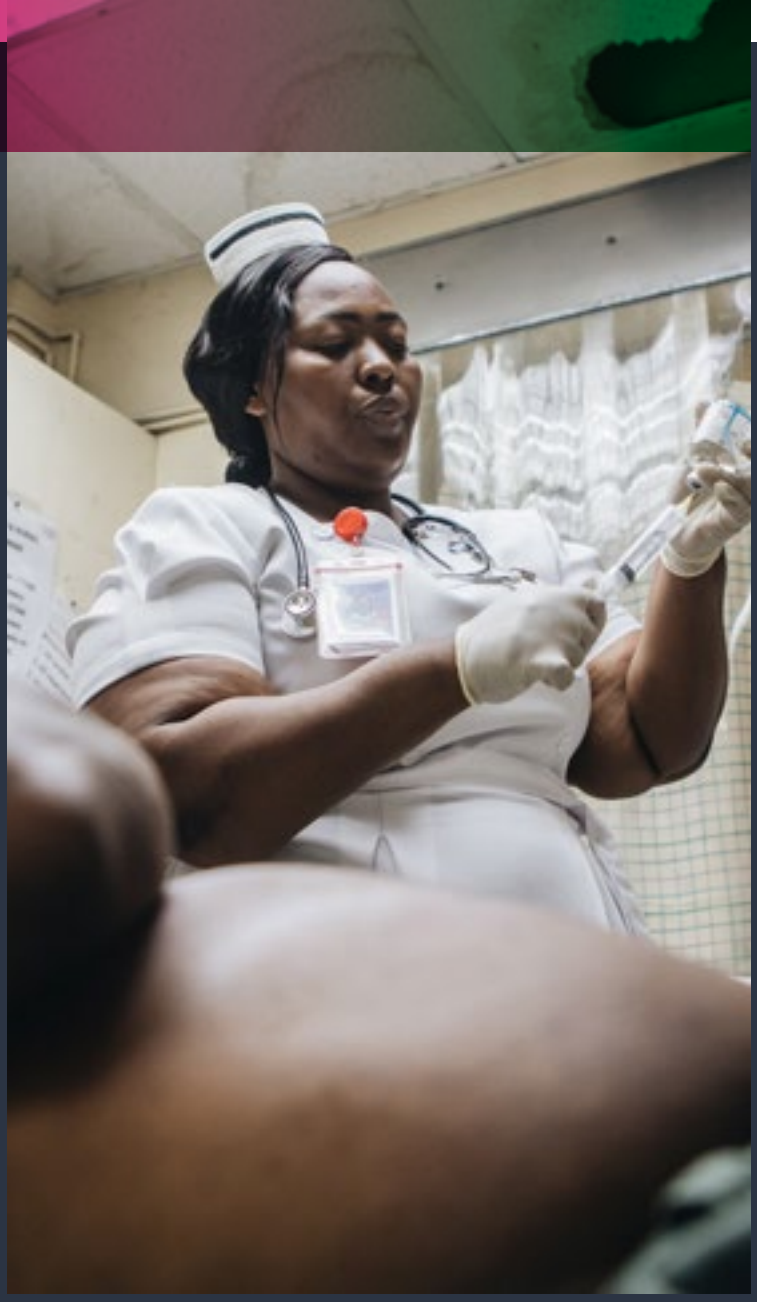
A comprehensive human capacity-building plan should be formulated and implemented to counteract the risks of losing capable members of staff (e.g. surveillance officers) because of salary differentials; country by country, national public health experts should be trained and brought into government service on civil service remuneration structures.

## 5. Further development of a global comprehensive communicable disease surveillance system

A high-level strategic meeting should be convened to explore the creation of a global surveillance network to capture information from primary sources of surveillance data, including national vaccine-preventable disease systems, other major communicable diseases systems (e.g. HIV, malaria), new and emerging infection detection systems, and more informal methods of recognising outbreaks or emergence; attention should be given to the feasibility of achieving interoperability, the inclusion of genomics, and artificial intelligence methods.

## 6. Establishing a wider biosecurity function

The establishment of a containment programme within the polio transition planning process offers the opportunity to create a broad-based biosafety and biosecurity unit within WHO to provide expertise, guidance and monitoring of all dangerous pathogens; this possibility should be considered.



## 7.

### Strengthening global oversight, coordination and performance management for essential immunisation

As part of the work on creating operational "annexes" for the next phase of the new global strategy, *Immunization Agenda 2030*, the global team and their partners should seek to establish how they will drive improvements in essential immunisation performance in a way that is stronger than advocacy, will sustain momentum, yet is acceptable to countries; the GPEI strengths in global oversight, coordination, performance management, and use of data provide helpful pointers.

## 8.

### Polio Transition Team involvement in the implementation of IMB recommendations

Given the synergies between polio eradication and polio transition activities, the appropriate teams involved in polio transition should become directly involved with the GPEI in the implementation of four recommendations in the 19th IMB report: 10 (Integrated models of service), 13 (Learning from polio outbreaks to strengthen resilience), 16 (Use of inactivated polio vaccine in polio outbreak zones to achieve "zero" paralysis), and 17 (Creation of high-level regional member state commission on polio in the Eastern Mediterranean Region).


## 9. Subnational mapping of capacity and capability

Each subnational administrative jurisdiction in the priority countries should be assessed for its capacity and capability to contribute to the objectives of polio transition (in particular, polio immunity; the risk of outbreaks and preparedness to deal with them; essential immunisation coverage; and surveillance quality); the resulting analysis should be presented as a comprehensive evaluative profile.

## 10. Publishing a risk register

A comprehensive risk register covering all aspects of polio transition planning should be drawn up and published as part of documentation reporting on progress.

**POLIO TRANSITION**
**INDEPENDENT** MONITORING BOARD