1. DISEASE ELIMINATION

GOAL 1: Achieve a world free of poliomyelitis (indicators G1.1 and G1.2)

**Highlights**

The Global Polio Eradication Initiative (GPEI) is making strong progress on several fronts.

- It has been two years since Nigeria (July 2014) and the African continent (August 2014) have detected the circulation of wild poliovirus (WPV).
- Since August 2014, wild poliovirus has been circulating in only two countries – Afghanistan and Pakistan.
- In April 2016, in a globally synchronized effort, 155 countries ceased using type 2 oral polio vaccine (OPV), switching from tOPV to bOPV. This was an important step in the polio endgame – a prelude to the time, after full eradication, when all oral poliovirus can be stopped.
- Given the failure in Afghanistan and Pakistan, the GPEI’s 2013–18 Strategic Plan to stop polio has been extended to run until the end of 2019 at an additional cost of US$ 1.5 billion.
- A shortfall in the global supply of inactivated polio vaccine (IPV) represents a constraint to the programme.
- In 2015 more countries were affected by circulating vaccine-derived poliovirus (cVDPV) outbreaks than by WPV, giving the former a greater precedence and illustrating how important the trivalent to bivalent OPV switch will be in 2016.
G1.1: INTERRUPT WILD POLIOVIRUS TRANSMISSION GLOBALLY

TARGET: 2014

G1.2: CERTIFICATION OF POLIOMYELITIS ERADICATION

TARGET: 2018

For the definition of each indicator, description of data sources, comments on data quality, description of results, narrative and highlights please refer to the documents listed in Box 1.

Box 1: Descriptions of indicators, results, data sources and highlights

1. For context, see the Global Polio Eradication Initiative Status Reports 2015 (June and December), available at: http://www.polioeradication.org/ResourceLibrary/Strategyandwork/Annualreports.aspx
2. To review the real-time updates on polio cases worldwide, see: http://www.polioeradication.org/Dataandmonitoring.aspx

Progress towards the achievement of polio eradication goals and interim milestones is intensively monitored by several bodies, including the Independent Monitoring Board of the GPEI, which reviews progress on a quarterly basis and issues a report after each meeting. Below are excerpts from WHO, GPEI and Independent Monitoring Board documents that summarize progress towards this goal and the corrective actions that are being taken, as well as recommendations for future actions.

Interruption of wild poliovirus transmission

In 2015 74 cases of paralytic poliomyelitis due to wild poliovirus were reported globally, compared to 359 cases in 2014. All the cases in 2015 were reported from Afghanistan and Pakistan and were caused by wild poliovirus type 1. On 20 September 2015, the Global Commission for the Certification of Poliomyelitis Eradication declared the global eradication of wild poliovirus type 2. Wild poliovirus type 3 has not been detected since November 2012.

Endemic countries – Afghanistan and Pakistan

Owing to continued cross-border transmission, Afghanistan and Pakistan continue to be treated as a single epidemiological block. In Pakistan, 54 cases were reported in 2015, compared to 306 in 2014. In Afghanistan, 20 cases were reported, compared to 28 in 2014. In Pakistan and Afghanistan, the interruption of wild poliovirus transmission depends on reaching all missed children, filling chronic gaps in strategy implementation and being able to vaccinate children
in infected areas that have been difficult to access due to insecurity. The remaining reservoirs of wild poliovirus are the Khyber-Peshawar-Nangarhar and Quetta-Kandahar corridors, linking Pakistan with Afghanistan, and Karachi in Pakistan. These are now the focus of attention for targeted, high-quality immunization activities.

In Pakistan, the number of polio cases continues to decline. A national emergency action plan for the disease is being overseen directly by the office of the prime minister. Emergency operations centres at federal and provincial levels ensure almost real-time monitoring of activities, implementation of corrective action and increased accountability and ownership at all levels. Most importantly, the national plan focuses on identifying chronically missed children, the reasons why they are missed and implementing area-specific approaches to overcome these challenges. As a result, innovative strategies are being implemented, operational weaknesses of the programme are being increasingly addressed and access continues to improve in previously inaccessible areas. Nevertheless, Pakistan in 2015 accounted for 73% of all wild poliovirus cases worldwide. Vaccination coverage gaps remain in Karachi, Peshawar-Khyber corridor and parts of the Quetta block with evidence of continued transmission.

In Afghanistan, the number of polio cases continues to decline steadily, for example in the southern region. However, transmission continues along corridors in the east and south, as evidenced by detection of wild poliovirus in children with acute flaccid paralysis (AFP) and in environmental samples. Although programmes are being improved in order to reduce the number of children missed in accessible areas, the deteriorating security situation is a concern, reducing access particularly in eastern and northern regions. A temporary suspension of vaccination by local leaders in the southern region was resolved by highlighting the importance of maintaining neutrality in public health efforts. A national emergency action plan is being implemented, all efforts to identify and address gaps are being closely tracked, and the country is developing innovative strategies to reach children wherever and whenever feasible, including with a strong focus on border areas. Table 1.1 shows the number of AFP cases in 2015 by WHO region.

<table>
<thead>
<tr>
<th>Table 1.1: AFP/polio case count in 2015, by WHO region</th>
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<tbody>
<tr>
<td>WHO region</td>
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<tr>
<td>African Region</td>
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<tr>
<td>Region of the Americas</td>
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<tr>
<td>South-East Asia Region</td>
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<td>European Region</td>
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<td>Eastern Mediterranean Region</td>
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<td>Western Pacific Region</td>
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</tbody>
</table>

Source: WHO; data as of 28 June 2016.

Recently-endemic countries – Nigeria

In Nigeria, no cases due to wild poliovirus type 1 have occurred since 24 July 2014; as a result, Nigeria was officially removed from the list of endemic countries on 25 September 2015. With large populations in remote, hard-to-reach areas, as well as regional insecurity, success in Nigeria was thanks to renewed political commitment and attention to detail at every level of the programme.

International spread of wild poliovirus

Episodes of international spread of poliovirus continued in 2015 with both Afghanistan and Pakistan exporting virus across their shared border. Minimizing the risk and consequences of new international spread of polioviruses requires the following: full implementation of the eradication strategies in the remaining infected areas; comprehensive application of the temporary recommendations issued by the WHO Director-General under the International Health Regulations (IHR 2005);
and heightened surveillance globally to facilitate a rapid response to new cases.

At its meeting on 10 November 2015, the IHR Emergency Committee noted with concern the current outbreaks due to circulating vaccine-derived poliovirus (cVDPV) types 1 and 2 and the emergence of such strains in three WHO regions in 2015, particularly at this stage of the Polio Endgame. The Committee recommended extending the temporary recommendations to countries affected by such outbreaks, which are shown in Table 1.2 and Figure 1.1 (previously, the recommendations had been limited to countries affected by wild poliovirus).

### Table 1.2: Breakdown of confirmed WPV and cVDPV cases in 2015, by country

<table>
<thead>
<tr>
<th>Country</th>
<th>WPV1</th>
<th>cVDPV type 1</th>
<th>cVDPV type 2</th>
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</thead>
<tbody>
<tr>
<td>Afghanistan</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pakistan</td>
<td>54</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Lao People’s Democratic Republic</td>
<td></td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Madagascar</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ukraine</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Guinea</td>
<td></td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Myanmar</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Nigeria</td>
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<td>1</td>
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</table>

Source: WHO; data as of June 2016.
Figure 1.1: Remaining wild poliovirus cases and cVDPV\(^a\) cases\(^b\) worldwide, 2015

\[\text{Figure 1.1: Remaining wild poliovirus cases and cVDPV cases worldwide, 2015}\]

\[^a\] cVDPV is associated with \(\geq 2\) AFP cases or non-household contacts. VDPV2 cases with \(\geq 6\) (\(\geq 10\) for type 1) nucleotides different from Sabin poliovirus type 1 are reported here.

\[^b\] Excludes viruses detected from environmental surveillance.

Source: WHO data; June 2016.

Vaccine-Derived Poliovirus Outbreaks

Circulating vaccine-derived polioviruses type 1

In 2015 in Madagascar, 10 new cases of a circulating vaccine-derived poliovirus type 1 were reported, genetically linked to isolates of the same strain first detected in 2014. In Ukraine, two cases were reported, with onset of paralysis on 30 June 2015 and 7 July 2015. In the Lao People’s Democratic Republic, 7 cases were reported, with the onset of paralysis for the first case occurring on 7 September 2015. Two more cases there have been reported to date in 2016.

In Madagascar, national efforts continue to be intensified to stop the prolonged circulation of the virus. In the Lao People’s Democratic Republic, a comprehensive outbreak response was launched immediately after confirmation of the first reported case. In Ukraine, an outbreak response commenced on 21 October 2015 after a delay of several weeks.

Circulating vaccine-derived polioviruses type 2

In Nigeria, one case of disease due to cVDPV2 was reported, with onset of paralysis on 16 May 2015, related to a strain first isolated from environmental samples in August 2014. In Guinea, four cases due to cVDPV2 were detected, related to a strain last detected in the country in August 2014. The onset of paralysis in the first case...
occurred on 20 July 2015. Two cases were also reported in Pakistan in February 2015. In Myanmar, two cases due to cVDPV2 were detected. The onset of paralysis was recorded in one case on 5 October 2015; the other case was assigned retrospectively with onset of paralysis in the same village in April 2015.

In Nigeria, the outbreak response is part of the national emergency action plan, overseen by the office of the president. In Guinea and border areas of Mali, outbreak response was initiated within two weeks of confirmation of the outbreak. In Myanmar, outbreak response was initiated in November, with two campaigns focusing on larger populations in December 2015. A strain isolated from a case with onset of paralysis in April 2015 detected in South Sudan is being managed as a circulating strain (the genetic linkage was uncertain, therefore the case was classified as an ambiguous VDPV; however the response was managed as a cVDPV based on the detection of known cVDPV2 cases several months earlier). Response activities are ongoing and the strain has not been detected since April 2016. The emergence of vaccine-derived poliovirus occurs only when routine immunization coverage is low, highlighting the importance of strengthening routine immunization systems.

Withdrawal of the type 2 component in oral poliovirus vaccine

On 20 September 2015, the Global Commission for the Certification of Poliomyelitis Eradication declared that wild poliovirus type 2 has been eradicated, with the last detected case occurring in 1999. On 20 October 2015, SAGE reviewed the situation of type 2 vaccine-derived polioviruses and progress towards global readiness for the coordinated, phased removal of oral polio vaccines. Subsequently, the global switch from trivalent OPV to bivalent OPV was conducted between 17 April and 1 May 2016. As of the start of May 2016, all 155 targeted countries and territories are no longer using the trivalent oral polio vaccine (tOPV), and have replaced it with bivalent OPV (bOPV).

Global vaccine supply to prepare for the trivalent to bivalent oral polio vaccine switch

To prepare for the switch to bivalent oral polio vaccine, all Member States have committed themselves to introduce at least one dose of inactivated poliovirus vaccine into their routine immunization programmes. The level of commitment from countries to meet this goal has been exceptional. SAGE noted the reduction in inactivated polio vaccine supply due to technical difficulties manufacturers have encountered in scaling-up production. Due to this, SAGE advised the following: prioritization of the use of inactivated poliovirus vaccine (i.e. introduction of vaccine in the higher-risk tier 1 and 2 countries before the switch); maintaining stocks of inactivated poliovirus vaccine and monovalent type 2 oral polio vaccine for response to a type 2 poliovirus outbreak after withdrawal of oral polio vaccine type 2; and minimizing the period of delay in inactivated poliovirus vaccine supply and the number of countries affected by it (currently only lower-risk tier 3 and 4 countries are affected by the delay). As of 1 July 2016, 168 (87%) Member States (including partial introduction in India) have introduced IPV (Figure 1.2). Six (3%) additional Member States have committed formally to introduce it by July 2016. Twenty countries (10%) have delayed the introduction to December 2017.

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4 Armenia, Cabo Verde, Equatorial Guinea, Guinea-Bissau, Indonesia, Swaziland.
5 Angola, Burkina Faso, Egypt, Eritrea, Ghana, Kyrgyzstan, Liberia, Malawi, Mongolia, Republic of Moldova, Rwanda, Sierra Leone, Tajikistan, Togo, Turkmenistan, United Republic of Tanzania, Uzbekistan, Viet Nam, Zambia, Zimbabwe.
Figure 1.2: Countries using IPV vaccine to date and countries having made a formal decision to introduce

GPEI continues to monitor closely the global supply of inactivated poliovirus vaccine, and tries to minimize the number of countries affected (in terms of delays in introduction and/or stock-out of inactivated poliovirus vaccine). The difficulties in supply have been aggravated by further production delays in the first quarter of 2016. In this context, the Global Polio Eradication Initiative is exploring with WHO regions and Member States the feasibility of instituting dose-sparing strategies, such as using intradermal administration of fractional-dose inactivated poliovirus vaccine (one-fifth of a full dose). In April 2016, to promote dose-sparing, SAGE encouraged countries to evaluate the cost–benefits, trade-offs and programmatic feasibility associated with providing IPV in a 2-dose fractional intradermal dose schedule (e.g. at 6 and 14 weeks) in lieu of a single intramuscular dose at 14 weeks. As of March 2016, some Member States have already committed to using fractional-doses. India in particular is participating in this effort, which should enable the country to maximize and optimize its available vaccine supply (potentially by as much as five times), thereby ensuring that the national vaccine supply for 2016 and 2017 can be fully met. Studies have shown that two fractional doses offer better protection to children than a single full dose (1).
Strengthening routine immunization

GPEI has started a joint programme of work with the Gavi Alliance and other partners to support efforts to strengthen routine immunization in 10 “focus” countries with significant polio resources. Six of these countries have developed annual national immunization plans that build on polio assets to improve broader immunization goals, resulting in as much as a 22% reduction in unimmunized children in some areas in 2014 compared with 2013 (2). Polio staff in these countries spend as much as 50% of their time on broader immunization and public health issues.

Containment

There was some progress on efforts to contain poliovirus type 2 in 2015, in line with the WHO Global Action Plan to minimize poliovirus facility-associated risk after type-specific eradication of wild polioviruses and sequential cessation of oral polio vaccine use (GAPIII) (3). As of 11 February 2016, 115 Member States reported they had no wild poliovirus type 2 or vaccine-derived poliovirus type 2, 12 reported they did, 26 were completing reports, with the remainder yet to complete their reports on the destruction or planned retention of wild poliovirus type 2 or vaccine-derived poliovirus type 2 materials, in designated “poliovirus-essential” facilities, with the simultaneous nomination of a national containment authority in countries hosting such facilities. By the end of July 2016, three months after the switch, countries are expected to complete the second part of phase I, and report on the destruction or planned retention of all Sabin type 2 poliovirus materials following the same approach. In phase II (the poliovirus type 2 containment period that started in 2016) Member States hosting poliovirus-essential facilities (vaccine production, research and repositories) are expected to certify these facilities have appropriately implemented the containment requirements described in GAPIII. The GVAP Secretariat is supporting Member States to rapidly accelerate efforts in order to complete phase I and implement the Global Vaccine Action Plan.

Post-polio eradication transition planning

Planning for the post-polio eradication transition is the fourth objective of the current GPEI Strategic Plan. When the GPEI’s work to eradicate polio is complete, it will leave behind the legacy of a polio-free world for all future generations, the most sustainable contribution that can be made by a public health programme. There also exists an opportunity for other health goals to make use of the existing polio infrastructure and the lessons learned in the polio eradication programme.

To date, the GPEI’s work towards polio transition planning has focused on raising awareness of the urgency in beginning the planning process and developing transition guidelines and other tools and guidance to assist country and regional planning processes.

In April 2016, GPEI completed a critical budget planning exercise covering the 2016–2019 period, setting out the budget decrease foreseen for the next four years. This provides the basis to plan human resource management accordingly, and seek alternative sources of funding where necessary. GPEI is now developing a plan detailing its overarching strategic approach for the next phase of transition planning. The plan sets out three workstreams to deliver the transition planning objectives.

a. Support the development of a transition plan in each of 16 priority countries.

To the greatest extent possible, the planning process is driven at country level and led by governments. In the 16 countries that have the greatest GPEI-funded assets, GPEI is supporting the government and working with current and new partners to develop a transition plan. Each plan will cover a specified time period and should be aligned or integrated with the country’s comprehensive multi-year plan (cMYP) for immunization, other relevant plans and the overall health sector plan. GPEI has developed and issued transition guidelines to assist countries with their planning process. GPEI is now supporting countries in applying these guidelines, particularly emphasizing a high-quality process of mapping country needs and GPEI assets, as the basis for subsequent planning and engagement of a broad range of stakeholders in the planning process, including donors. The goal is for 14 of the 16 priority countries to have developed a transition plan by the end of 2016. The other two countries –

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(4) Chad, Democratic Republic of the Congo, Ethiopia, India, Nigeria, Pakistan
Afghanistan and Pakistan – will develop plans after polio transmission is interrupted.

b. Facilitate the development of a global transition plan.

GPEI has assets at regional and global levels – principally in its headquarters and the regional offices of its partner agencies. Also, some assets that are based in countries might need to remain part of regional, global, or other supranational programmes or organizations – in one or more of their funding, direct management, and coordination activities. A global plan will therefore need to be developed in tandem with the country transition plans.

c. Document and disseminate the lessons of polio eradication.

It is critical to document the lessons learned from polio eradication, as one of the largest ever global health initiatives. GPEI will document and disseminate lessons learned from polio eradication in multiple media forums.

Update for 2016

After more than two years without wild poliovirus in Nigeria, the government reported on 11 August 2016 that two children have been paralysed by the disease in the northern Borno state.

References


Bibliography

• Polio data monitoring (http://www.polioeradication.org/Dataandmonitoring.aspx) provides real-time updates on polio cases in the world.