

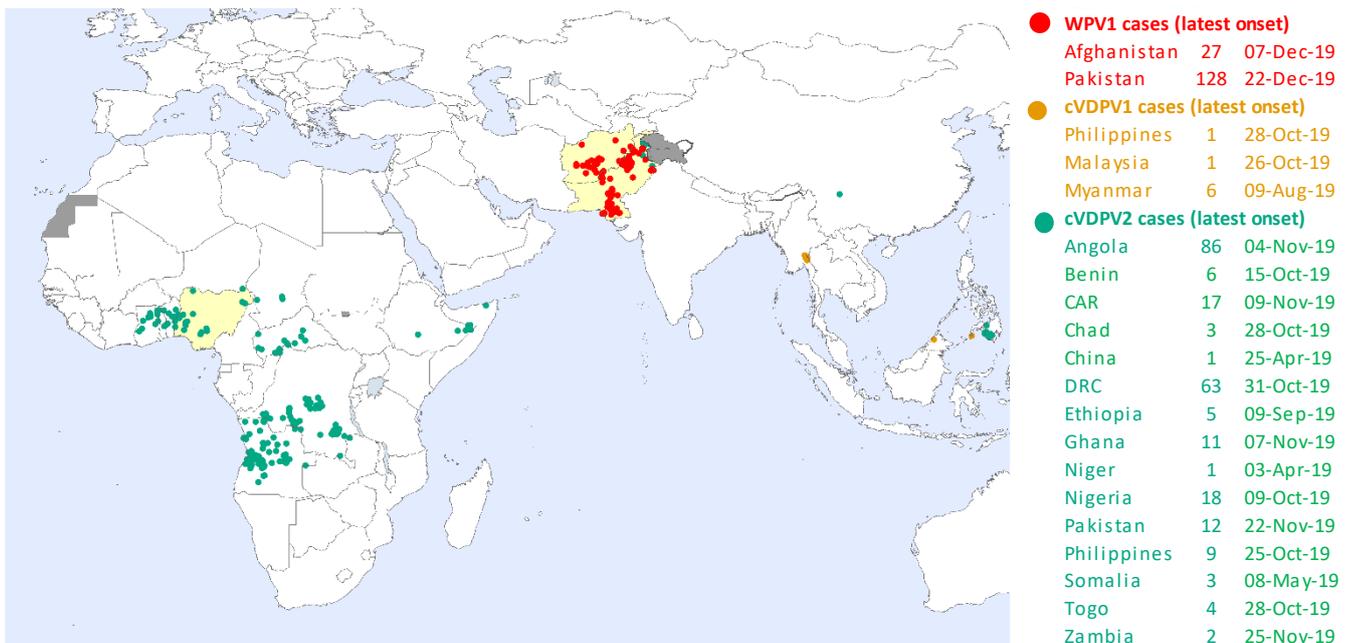
Responding to circulating vaccine-derived poliovirus outbreak type 2

Type 2 outbreak is a global challenge

Following the global certification of the eradication of wild poliovirus type 2, a synchronized global switch removing type 2 containing live attenuated polio vaccine from immunization systems was carried out in April 2016. For risk mitigation purposes, the Switch was preceded by the introduction of one dose of inactivated polio vaccine (IPV) into national immunization schedules in Pakistan and other countries that did not already use IPV. In Pakistan, this introduction was also preceded by supplementary immunizations using trivalent OPV.

While the switch was a critical step in ensuring all type 2 related poliomyelitis is prevented, a possibility of the emergence of post-switch circulating vaccine-derived poliovirus type 2 (cVDPV2) was anticipated and a Sabin monovalent OPV2 stockpile was maintained to ensure timely and appropriate response. Pre-Switch modelling predicted that the majority of post-Switch VDPV2 emergence and cVDPV2 outbreaks would occur in the 24-month period after the Switch BUT 3 years after the Switch, the number of outbreaks and number of countries affected by cVDPV2s has continued to increase (Figure 1).

Figure 1 – Global distribution of confirmed poliomyelitis cases from wild and circulating vaccine-derived poliovirus in the preceding 12 months. *Source: Data at WHO HQ as of 7th January 2020*



The use of mOPV2 is associated with the seeding of type 2 and against the backdrop of declining global type 2 population mucosal immunity, its use is now directly associated with new outbreaks. In addition, due to the increasing number of outbreaks, there is severe strain on mOPV2 supply which is also constraining the capacity to effectively respond to confirmed outbreaks.

To address all these inter-related challenges, the GPEI has developed a new Strategy. Table 1 below highlights the key features of the strategy.

Table 1 – Overview of the three Stages of the GPEI response strategy to cVDPV2 outbreaks

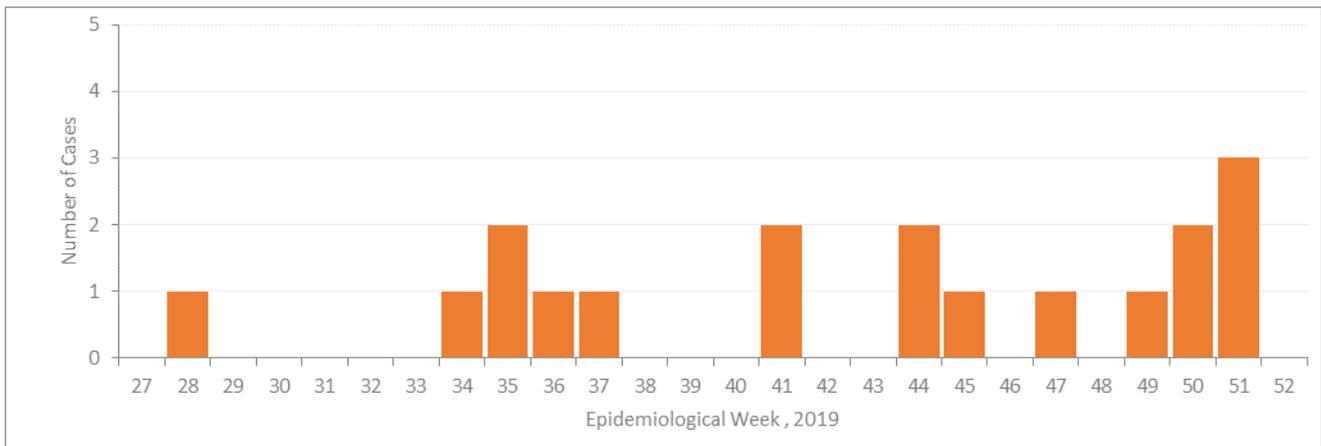
Stages	Description
Stage 1: controlling new and ongoing cVDPV2 and mitigating paralytic risk using available vaccines	Response using monovalent Sabin OPV2 and strategic IPV. Stage 1 to end in July 2020 when monovalent novel OPV2 is expected to become available for use
Stage 2: novel OPV2 deployed for outbreak response	Begins with first deployment of novel OPV2 to control outbreaks and ends when the supply of novel OPV2 is sufficient to wholly replace Sabin OPV2. RI intensification activities to continue.
Stage 3: novel OPV2 replaces sabin OPV2 for outbreak response	Begins when novel OPV2 completely replaces Sabin OPV2. RI intensification activities will continue.

Post-Switch cVDPV2 outbreaks in Pakistan

Following the Switch, Pakistan detected cVDPV2 in Quetta, Balochistan in late 2016 and through quick and aggressive response, interrupted transmission immediately. However, starting in April 2019, new type 2 events and outbreaks have been detected. Despite detailed investigations, the exact source of these new emergences has not been identified and investigations are still underway. Considering the decline in the type 2 population mucosal immunity following the Switch, it is very likely that the ongoing outbreak will continue to spread across the country. While global vaccine supply constraints are limiting capacity of the programme to aggressively respond to these outbreaks, the continued use of mOPV2 has seeded new type 2 poliovirus in and around naïve populations that also creates risks of emergence of new outbreaks.

As of 13 January 2020, there are 18 cases of confirmed cVDPV2. The cases were reported from Gilgit Baltistan, Khyber Pakhtunkhwa (KP), Islamabad, and Punjab (Figure 2).

Figure 2 – Epidemiological curve showing cVDPV2 cases, Pakistan, 2019



National Emergency Operations Centre strategy for cVDPV2 response

Considering the global challenges with vaccine supply and the inherent shortcomings of mOPV2, it is likely that type 2 circulation (ongoing outbreaks and/or new emergences) may continue in 2020. The primary objective of the Pakistan programme will be to protect children from paralysis. To accomplish that, the programme has developed a four-pronged strategy:

- **Routine immunization:** accelerated catch-up using IPV in areas at risk and across the country.
- **Supplementary immunizations**
 - o Rapid response with at least two rounds of mOPV2 in areas with confirmed cVDPV2 circulation
 - o Strategic use of IPV – fractional and/or full dose – in at risk areas especially high population centres and critical population nodes
- **Communication:** Strategy to mitigate risk to the programme and support routine immunization
- **Surveillance:** enhance early detection

Following early detections, two rounds of mOPV2 were implemented in Diamir and Gilgit districts of Gilgit-Baltistan, Hazara division in Northern KP, Islamabad and Rawalpindi. Following spread to Charsadda, KP and Gujranwala, Punjab, a two round mOPV2 response is underway in multiple districts in the two provinces.

Next steps

1. Finalize updated communication strategy for cVDPV2 (**Due, 31 January 2020**)
2. In view of new cases, expand mOPV2 response scope to new geographies (**Due, 15 January 2020**)
3. Finalize a strategic IPV SIA plan to enhance coverage in areas at highest risk (**Due, 15 January 2020**)