

KEY POINTS ABOUT POLIOVIRUS CONTAINMENT

August 2023

Two out of three wild poliovirus types have been eradicated

- Wild poliovirus type 1 (WPV1) is the only naturally occurring strain of poliovirus still circulating. Wild poliovirus type 2 (WPV2) was declared eradicated by the Global Commission for the Certification of Eradication of Poliomyelitis (GCC) in September 2015, and in October 2019, the Commission declared the eradication of wild poliovirus type 3 (WPV3).
- Eradication of WPV2 and WPV3 means that these viruses are no longer found in communities or in the environment. Some facilities around the world still use and store the strains, however, for vaccine production or research purposes.
- In April 2016, the world stopped the use of type 2 oral polio vaccine (OPV2) in childhood routine immunization schedules. OPV2 is now only used for responding to type 2 circulating vaccine-derived poliovirus (cVDPV2) outbreaks which continue to occur in some countries. Type 3 oral polio vaccine (OPV3) continues to be routinely used in many countries as part of a bivalent oral polio vaccine which protects against types 1 and 3 polio. OPV is made of live attenuated (weakened) poliovirus strains.

All type 2 and specific type 3 poliovirus materials must be destroyed or appropriately contained

- WHO urges countries to destroy all poliovirus type 2 materials unless they are needed for the continuation of critical functions such as vaccine production, key research, or outbreak response activities. Destruction targets wild poliovirus, vaccine-derived poliovirus (VDPV), and unused and unneeded oral polio vaccine containing the type 2 serotype, as well as type 2 Sabin-like materials and all other materials potentially containing type 2 poliovirus.
- Similarly, WHO urges the destruction of WPV3 and VDPV3 materials, unless critically needed. Measures for the containment of OPV3 and type 3 Sabin-like materials will come into effect once bivalent oral polio vaccine which is composed of OPV3 and OPV1 is retired from routine use.
- Facilities that wish to retain poliovirus type 2ⁱ, WPV3 and/or VDPV3ⁱⁱ materials must work to safely and securely contain these viruses and be certifiedⁱⁱⁱ against the implementation of WHO poliovirus containment requirements, GAPIV/III (see below regarding GAPIV/III and endnotes for type-specific containment timelines).

Safe and secure containment minimizes the risk of release of poliovirus into communities

- Containment includes biosafety and biosecurity requirements for laboratories, vaccine production sites, or other facilities that handle or store eradicated polioviruses, to minimize the risk of accidental or intentional virus release into communities. It also concerns risk mitigation measures associated with field use of type 2 containing oral polio vaccines.
- Containment is a key objective of the [Polio Eradication Strategy 2022-2026](#) and will be critical for maintaining a polio-free world for the long-term.

Any release of eradicated polioviruses could have major consequences

- If eradicated poliovirus strains are released into communities, person-to-person transmission could resume and potentially cause paralysis and death in populations. This is particularly a risk in areas where polio vaccination coverage is low. However, even in countries with high levels of coverage, some people may not be vaccinated or fully protected against the virus, putting them at risk of infection if they are exposed.
- The consequences associated with the release of polioviruses are expected to be amplified once the world stops routinely using OPV (post-eradication).

- A release of the only other eradicated human pathogen, smallpox virus, from a laboratory in the United Kingdom in 1978 resulted in a person dying from the disease. This triggered countries to reduce the number of facilities retaining smallpox virus to two official repositories that remain today, ensuring they meet the highest containment requirements.
- Learning from the smallpox experience, the polio eradication programme is working with countries to minimize the number of sites retaining eradicated strains, and to ensure that containment requirements are appropriately implemented in these facilities.

WHO sets the requirements for facilities retaining polioviruses

- The *WHO Global Action Plan for Poliovirus Containment* (GAPIV, formerly GAPIII 2015), published in July 2022, is the chief reference document for poliovirus containment.
- All countries holding poliovirus stocks are urged to follow the requirements in GAPIV/III to ensure risk associated with handling or storage of poliovirus is minimized.
- Strategies to minimize risk include destroying unneeded poliovirus materials (risk elimination), or safely and securely containing needed materials in a poliovirus-essential facility (PEF) (risk mitigation). A PEF is a facility designated and determined by its host country to be serving critical functions such as polio vaccine production or research that warrants continued handling or storage of poliovirus.
- Countries hosting such facilities understand the responsibilities inherent in complying with the crucial facility, immunization coverage and environmental safeguards.
- GAPIV/III describes the various requirements for PEFs to implement poliovirus containment safely and securely.
- PEFs and their host countries are responsible for appropriate containment of eradicated polioviruses. PEFs must meet the requirements for safe and secure handling and storage of poliovirus, and the host countries must ensure additional safeguards such as high population immunity levels and environmental sanitation around PEFs.
- Facilities that do not wish to destroy their poliovirus stocks nor implement containment measures may opt to safely transfer their needed materials to a PEF.

Facilities must be certified to handle or store eradicated polioviruses

- Only facilities holding certifications approved by their respective National Authority for Containment (NAC) and endorsed by the GCC, are permitted to handle or store eradicated polioviruses.
- The *Containment Certification Scheme* (CCS) helps countries put in place the appropriate mechanisms to enable national certification against the requirements in GAPIV/III with appropriate global oversight.
- The CCS offers three stages of containment certification: (1) certificate of participation (CP) is awarded to facilities in countries that have demonstrated compliance with the required population immunity and environmental safeguards described in GAPIV/III and are recognized by their NACs and the GCC as suitable to engage in the CCS process; (2) an interim containment certification (ICC), which allows facilities broadly compliant with GAPIV/III to continue conducting activities such as vaccine production and research, provided they have effective alternative control measures in place; and (3) certificate of containment (CC) is awarded when the facility is fully compliant with GAPIV/III.

Once eradicated, wild and vaccine-derived poliovirus type 1 must also be contained

- WPV1 continues to circulate in two countries – Afghanistan and Pakistan. By the time WPV1 is declared eradicated, all WPV1 and VDPV1 materials will need to be contained^{ii iii}.
- Measures for the containment of OPV1 and type 1 Sabin-like materials will come into effect once bivalent oral polio vaccine (which is composed of OPV1 and OPV3) is retired from routine use.

Many samples may potentially be infected with poliovirus

- Samples (e.g. stool, respiratory secretion or concentrated sewage samples) collected at times and in geographic areas where wild poliovirus types 2 or 3, vaccine-derived poliovirus types 2 or 3 were in circulation or oral polio vaccine type 2 was in use, may harbour viruses requiring containment.
- ‘Non-poliovirus facilities’ may unknowingly be handling or storing samples potentially infected with polioviruses. Examples include facilities working with stool, respiratory or environmental sewage samples to carry out rotavirus, hepatitis, influenza, measles, diarrhoeal disease or nutrition research.
- [Tailored guidance](#) for these non-polio facilities has been developed to help them identify samples potentially infected with polioviruses, and to implement appropriate containment measures for their safe and secure retention.

Universal intent to accelerate poliovirus containment action

- At the 71st World Health Assembly in May 2018, through a WHA [resolution](#), WHO Member States committed to accelerating containment progress globally.
- Significant progress has been made since 2018, however, it has not been universal nor fast enough. Countries are strongly urged to enhance efforts to ensure appropriate containment of polioviruses.

Relevant links

- [Global Polio Eradication Initiative \(GPEI\) - poliovirus containment](#)
- [GPEI Polio Eradication Strategy 2022-2026](#)
- [GPEI Strategy for Global Poliovirus Containment and Poliovirus Containment Action Plan 2022-2024](#)
- [WHO Global Action Plan for poliovirus containment \(GAPIV\) and Containment Certification Scheme \(CCS\)](#)
- [WHO guidance for non-poliovirus facilities to minimize risk of sample collections potentially infectious for poliovirus \(PIM guidance\)](#)
- [Global Commission for the Certification of Eradication of Poliomyelitis \(GCC\) reports including containment recommendations](#)
- [2018 World Health Assembly resolution on the containment of polioviruses \(WHA71.16\)](#)
- [WHO guidance for facility-related exposure to live polioviruses](#)

ⁱ Containment of all type 2 poliovirus materials is required now.

ⁱⁱ The Global Commission for the Certification of Eradication of Poliomyelitis (GCC) has recommended that countries initiate containment for WPV1 and WPV3. This includes surveys and destruction of unneeded materials, and the registration of all facilities that will retain the virus stains in the future into the Containment Certification Scheme (CCS). All facilities retaining WPV1/WPV3 are expected to hold a valid CCS certificate of participation (CP) by end-2023. The GCC has recommended that containment of VDPV1 and VDPV3 begin as soon as possible.

ⁱⁱⁱ Global polio action plans have a target of all facilities retaining poliovirus (all types) obtaining full containment certification, i.e. hold a valid CCS certificate of containment (CC), by the time of eradication declaration and validation of absence of cVDPVs, by the GCC. These two milestones are expected by end-2026 as per the current GPEI 2022-2026 strategy.