

PAHO STRATEGIC RESPONSE PLAN AND APPEAL: POLIO



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PAHO Strategic Response Plan and Appeal: Polio

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CRISIS OVERVIEW

In May 2014 (1), the WHO Director-General declared the international spread of poliovirus a Public Health Emergency of International Concern (PHEIC) under the International Health Regulations (IHR 2005), issued Temporary Recommendations to reduce the international spread of poliovirus, and requested a reassessment of this situation by the Emergency Committee every three months. In October 2022, in its last meeting (2), the Committee unanimously agreed that the risk of the international spread of poliovirus remains a PHEIC and recommended the extension of Temporary Recommendations for a further three months.

Since the certification of polio elimination in 1994, countries in the Americas have continued vaccination efforts and epidemiological surveillance of acute flaccid paralysis cases (AFP). However, with more than two years of the COVID-19 pandemic and the current PHEIC due to the multi-country outbreak of monkeypox (mpox), health systems face significant challenges, and the decline in vaccination coverage, which started before the COVID-19 pandemic, has been exacerbated.

Consequently, population susceptibility to vaccine-preventable diseases (VPD) has increased. In addition to low vaccination coverages, many countries in the Region could not introduce two doses of Inactivated Poliovirus Vaccine (IPV) immediately after switching from trivalent oral polio vaccine (tOPV) to bivalent oral polio vaccine (bOPV) to ensure children's immunity against serotype 2. The Technical Advisory Group (TAG) on VDPs recommended this step, but there was a global shortage of IPV at that time. As a result, some cohorts received only one dose of IPV, which means those children are inadequately immunized against poliovirus type 2. In this context, the occurrence of new cases and/or outbreaks of VPDs, including poliomyelitis, cannot be ruled out.

The increase in susceptible population because of

low vaccination coverage and late IPV2 introduction in many countries translates into a higher risk of the occurrence of poliovirus cases, secondary to a poliovirus importation or emergence and its spread in the Region of the Americas, with an even higher risk for poliovirus type 2. In addition, there are countries and territories with weak surveillance of VPDs, including surveillance of polio; this weakness increases the risk of not detecting cases or outbreaks in a timely manner, particularly in vulnerable populations (e.g., Indigenous Peoples, migrants). Especially, in the context of the pandemic, there has been a significant decrease in the detection of AFP per 100 000 children under 15 years old compared to the detection in prior years. At the regional level, the average rate fell from 1.27 for the period 2016-2019, to 0.83, and 0.92 for 2020 and 2021, respectively. Accordingly, the risk of occurrence of cases or outbreaks of poliomyelitis and its subsequent spread at the regional level is high (3).

As a result of epidemiological surveillance conducted in the United States, on 21 July 2021 the New York State Department of Health reported the identification in Rockland County of a case of paralytic poliomyelitis in an unvaccinated immunocompetent 20-year-old male. The patient initially presented with fever, neck stiffness, gastrointestinal symptoms, and limb weakness. Initial sequencing confirmed by the United States Centers for Disease Control and Prevention (CDC) indicated it was a vaccine-derived poliovirus type 2 (VDPV2) (3).

The detection of this case prompted the Pan American Health Organization (PAHO) to publish an Epidemiological Alert on 21 July 2022 with guidelines for national authorities in the Region of the Americas.

On 13 September 2022, CDC reported that polioviruses detected in environmental samples collected on 3 August and 11 August 2022 contained

more than five nucleotide changes and that they were related to the case reported in Rockland County. This situation evidences the transmission of the virus and meets the criteria to be classified as circulating VDPV2 (cVDPV2) (4). PAHO is working together with CDC to follow up on this event.

Previously, on June 10 2022, PAHO had warned of the risk of importation of wild poliovirus and vaccine-derived poliovirus (VDPV), or the emergence of vaccine-derived poliovirus (VDPV1 and VDPV3) in the Region of the Americas, and it urged Member States to implement effective and timely measures (3).

DISEASE INFORMATION

Poliovirus is a human enterovirus and there are three serotypes of poliovirus: type 1, type 2, and type 3. Wild poliovirus (WPV) was the cause of thousands of cases of AFP and deaths for many years in the past; however, after the introduction of the polio vaccines, only serotype 1 of wild poliovirus (WPV1) continues to circulate. The last wild poliovirus serotype 2 (WPV2) was isolated in 1999 and declared eradicated in 2015. Meanwhile, the last wild poliovirus serotype 3 (WPV3) was isolated in 2012 and declared eradicated in 2019. Immunity to one serotype does not confer immunity to the others. Fecal-oral transmission of the poliovirus is the predominant mode in low-income countries where sanitation is poor, whereas oral-pharyngeal transmission is more likely to predominate in high-income countries during outbreaks (4).

The incubation period for paralytic poliomyelitis is usually 7 to 21 days (range 4–40 days) (5). Approximately 90% of infections are asymptomatic or present with nonspecific fever. Other symptoms could include aseptic meningitis, fever, malaise, headache, nausea, and vomiting. If the disease progresses to a more severe illness, muscle pain and stiffness of the neck and back with flaccid paralysis may occur. Paralysis usually presents asymmetrically, with fever present at onset. Paralysis of respiratory muscles can be life-threatening. Although some improvements in paralysis may occur during convalescence, paralysis still present after 60 days is likely to be permanent. Adults who contracted paralytic poliomyelitis during childhood may develop post-polio syndrome 15 to 40 years later. This syndrome is characterized by a slow and irreversible exacerbation of weakness, generally in those muscles affected during the original infection.

Two types of vaccines are commercially available for routine immunization: a live, attenuated oral poliovirus vaccine (OPV) and an injectable inactivated poliovirus vaccine (IPV). In rare circumstances, adverse events associated with OPV could result in a case of vaccine-associated paralytic poliomyelitis (VAPP),

which can occur in vaccinated individuals or their contacts. The incidence of VAPP has been estimated at 2–4 cases/million births per year in countries using OPV (6).

Live attenuated viruses from OPV can, through prolonged replication in immunocompromised persons or in a community with low vaccination coverage, reacquire the neurovirulence and transmissibility characteristic of the wild poliovirus. These VDPVs can cause cases or outbreaks of paralytic poliomyelitis. They are genetically divergent of the original Sabin vaccine virus, conventionally defined by > 1% genetic divergence (or > 10 nucleotide [nt] changes) for PV1 and PV3 and > 0.6% (or > 6 nt changes) for PV2, in the VP1 region of the viral genome (7).

All cases of AFP among children under 15 years of age must be notified, and stool specimens should be collected within 14 days of paralysis onset and tested for viral isolation in cell culture. When there is any positive isolation, intratypic differentiation for RT-qPCR assays are performed. The assays permit an initial characterization of either Sabin-like or non-Sabin-like poliovirus. If VDPV is suspected, sequencing of the VP1 region of the viral genome allows genetic characterization of the virus and is the final confirmatory test. The diagnosis of paralytic poliomyelitis is supported by the following: (i) clinical course, (ii) virological testing, and (iii) residual neurologic deficit 60 days after onset of symptoms.



MAIN PUBLIC HEALTH CONCERNS AND HEALTH SECTOR RESPONSE

Risk of geographical spread

The increase of susceptible population (as a result of factors described above) in many countries translates into a higher risk of occurrence of poliovirus cases and its spread in the Region of the Americas. In 2021, 32 countries/territories (out of 39) had not achieved vaccination coverage of $\geq 95\%$ with the third dose of the poliovirus vaccine using either OPV or IPV (Polio3). Within that group, 15 countries had $< 80\%$ coverage. In the United States, detection of cVDPV2 is an event with a moderate risk of spreading since this country has a sensitive and robust surveillance system. However, in the Region of the Americas several countries and territories have weak surveillance systems for VPDs, which increases the risk of not detecting cases or outbreaks in a timely manner, particularly in vulnerable populations (Indigenous Peoples, migrants, among others) and is a challenge for the vaccination field teams. Accordingly, the risk of occurrence of cases or outbreaks of poliomyelitis and its subsequent spread at regional level is high.

In 2022, 581 AFP cases caused by cVDPV types 1, 2, and 3 were reported in 23 countries worldwide; from these total, 495 cases were due to cVDPV2, in 18 countries (8).

The identification of cVDPV2 in the United States is a reminder that until all strains of polio are eradicated, all countries will remain at risk of polio re-infection or re-emergence. The emergence of this cVDPV2 strain underscores the importance of maintaining high levels of routine polio vaccination coverage at all levels to minimize the risk and consequences of any poliovirus circulation. Countries must also maintain sensitive surveillance systems for the timely detection of a WPV1/cVDPV – particularly type 2 – importation or cVDPV type 1 or type 3 emergence in countries of the Region.

Since the confirmation of the Rockland case, PAHO has provided technical guidance to all Member States, with particular emphasis on very high risk and high-risk countries. The situation was presented on 14–16 July 2021 and 25 July 2022 to the TAG (9), and polio-specific recommendations have been provided to the countries. As the Regional Certification Commission (RCC) Secretariat, PAHO/WHO has supported the RCC in the provision of periodic general and country-specific recommendations. Furthermore, PAHO has advised Member States on the need to increase vaccination coverage, improve surveillance performance, and prepare a response for a possible polio event or outbreak.

During the 30th Pan American Sanitary Conference (CSP), the Member States approved the resolution CSP30.R13, through which they committed to formulating and executing a polio risk mitigation plan, considering the context, needs, vulnerabilities, and priorities of each country. This resolution also requested PAHO to provide technical cooperation and promote collaboration among Member States.

PAHO has coordinated closely with the United States in the response to the cVDPV2 outbreak in New York State, and the Organization has taken preparatory actions to ensure the provision of technical support to Member States in their efforts to mitigate risk and respond effectively.

Risk assessment

In the Region of the Americas, vaccination coverage in children less than one year has continued to decrease since 2016, a trend that continued in 2018 and 2019 in 20 out of 39 countries. In 2021, the Region experienced its lowest coverage of polio 3 vaccination. Preliminary regional immunization coverage for the third dose of vaccine against polio (Polio3) rested at 80% (10). At least 5.7 million children under age 1 – 46% of the regional birth cohort – reside in areas where immunization coverage is below 80%, and 1.3 million of these infants live in districts with coverage below 50% (11). Only eight countries in the Region achieved greater than 95% coverage with two doses of IPV.

Within this broader context, some countries and populations experience even greater risk. During the 14th meeting of the RCC, held 6–8 July 2022, a risk assessment was conducted for the Region of the Americas considering immunization coverage, surveillance, health determinants, containment status, and outbreak preparedness and response variables. Four countries (Haiti, Brazil, Dominican Republic, and Peru) were classified as very high risk and eight (Ecuador, Bolivia (Plurinational State of), Venezuela (Bolivarian Republic of), Panama, Guatemala, the Bahamas, Argentina, and Suriname) as high risk for an outbreak due to importation of WPV1/VPV or the emergence of cVDPV.

Children from minority ethnic groups, those who live in rural areas or on the outskirts of large cities with difficult access to health care, and members of families of illegal residents, among others, are more likely to be part of unvaccinated children's groups and therefore more susceptible to getting sick (12). This low coverage increases the risk of an event or polio outbreak, especially among unvaccinated or partially vaccinated children (3).

Interrupted vaccination activities

The pandemic worsened an already existing trend. Health authorities postponed vaccination campaigns, and caused a further decreased in demand (3). The pandemic further worsened immunization coverage in 33 of 39 countries when 2021 values are compared with 2018.

As of September 2022, the 2021 data available indicates that 33 countries/territories in the Region have not yet implemented the TAG recommendation. They are using two or more doses of the bOPV as part of primary immunization schedules or as booster doses, while only 11 countries/territories (Argentina, Aruba, Bermuda, Canada, Cayman Islands, Chile, Costa Rica, Mexico, Uruguay, and the United States) follow the recommendation to use only IPV in their immunization schedules. Seven countries/territories (Curaçao, Dominican Republic, Haiti, Nicaragua, Saint Kitts and Nevis, Saint Lucia, and Suriname) (14) had not introduced IPV2 into their routine immunization schedules at all (3). However, Nicaragua introduced IPV2 at the beginning of 2022.

Vaccine availability

According to the PAHO Revolving Fund (RF), both vaccines – IPV and bOPV – are available to meet the need for routine vaccination. To respond to a VDPV1 or VDPV3 outbreak, the bOPV will be the vaccine of election (15), available through the RF. Additionally, in some special situations, the Strategic Advisory Group of Experts (SAGE) on Immunization concluded that IPV could be used to conduct a timely initial outbreak response. SAGE based its recommendation on literature and program experience of using IPV for poliovirus outbreak control, and it reached this conclusion at its October 2022 meeting. In those instances, IPV will be available through the RF.

To respond to a VDPV2 high-risk event or outbreak, the vaccines of election will be type 2 monovalent OPV (mOPV2), tOPV, or the Novel Oral Polio Vaccine type2 (nOPV2). The nOPV2 is a modified version of OPV2 (mOPV2), which clinical trials have shown provides comparable protection against poliovirus while being more genetically stable and less likely to be associated with the emergence of cVDPV2 in low immunity settings. These vaccines are not commercially available and should be requested to the WHO Director-General in coordination with the regional polio response team. If its use has been authorized, The United Nations Children’s Fund (UNICEF) will send the country any of these three vaccines to avoid delay and ensure a rapid outbreak response.

Community engagement

In celebration of World Polio Day, PAHO/WHO launched a campaign called “8 Days of Action for Vaccination” (October 24 to 31) to raise awareness and support efforts to eradicate polio worldwide, including continuing vaccination and maintaining epidemiological surveillance actions. It also sought to revitalize the importance of immunization as a public good for universal health in the countries and territories of the Americas. The campaign included messages on social media and live conversations with experts.

AFP reporting rates

Between 2020 and 2022, there has been an important reduction in the number of reported AFP cases compared to the pre-pandemic period. The expected number of reported AFP cases for 2022 is 2212; however, as of epidemiological week (EW) 52 of 2022, only 1838 AFP cases have been reported. Uruguay has not reported any AFP cases, and the Caribbean countries have reported a single case; only 11 countries have reached the notification rate in the last 52 weeks. Additionally, from EW 1 to EW 52 of 2022, only 5 countries met the goals for all three main indicators (AFP rate, percentage of cases investigated within 48 hours, and percentage of cases with an adequate sample). Accordingly, there is a risk that a cVDPV event or outbreak will occur and that it will not be detected in a timely manner.

PAHO's POLIO RESPONSE STRATEGY

Objectives

PAHO's polio response strategy aims to **enable Member States to increase vaccination coverage rapidly; improve surveillance performance through a whole-of-society approach to reduce the risk of a polio outbreak; and ensure that national health systems and services are prepared to detect and respond to poliovirus event or outbreaks.**

PAHO targets three strategic objectives:

Strategic Objective 1:

Advocacy for an all-sector approach

Strategic Objective 2:

Technical cooperation for risk communication

Strategic Objective 3:

Technical cooperation for risk mitigation

Strategic Objective 1: Advocacy for an all-sector approach

Priority Area 1.1: High-level advocacy to achieve an all-of-society approach to implement measures that contribute to maintaining the Region of the Americas free of polio

Ensure countries can lead efforts to increase vaccination coverage, improve surveillance performance, and implement other measures to decrease the risk of polio.

- Engage decision-makers at the highest levels of Government, both at the national level and sub-national levels, to advance jointly and work in a coordinated manner to maintain the Region of the Americas free of polio, focusing on high- and very high-risk countries.
- Promote multi-sectorial and inter-institutional coordination in the country's response efforts, jointly with national health authorities, as well as civil society, community leaders, non-governmental organizations, the private sector, academic institutions, and other stakeholders.
- Coordinate and facilitate the visits of PAHO's Executive Management, RCC, and other high-level experts to and high and very high-risk countries to follow up on the implementation of the recommendations.
- Advocate for the integration of immunization programs into the primary health care system to better contribute to the achievement of universal health while identifying, deploying, and promoting innovative approaches and technologies to improve coverage and surveillance.
- Conduct high-level advocacy efforts to address health challenges from the perspective of the social determinants of health, including access to clean water and education, among others.

Strategic Objective 2: Technical cooperation for risk communication

Priority Area 2.1: Enhance Risk Communication & Community Engagement (RCCE)

Ensure adoption of preventive actions with emphasis on high and very high risk countries

- Support countries to develop, update, and implement RCCE plans to promote polio vaccine uptake, surveillance strengthening and outbreak preparedness and response.
- Support countries to identify and engage relevant actors at the local level to promote vaccination, surveillance, and outbreak preparedness and response efforts and messaging.
- Support and encourage data gathering and use on the Behavioral and Social Drivers (BeSD) of polio vaccination to inform communication campaigns and interventions to support the increase of vaccine acceptance and uptake.
- Develop communication campaigns specific for the different vaccination strategies under the framework of the RCCE strategy.
- Develop training materials for national and local-level community workers, community leaders, and healthcare workers in interpersonal communication to support disseminating messages and materials to the target populations.
- Monitor information on social media and traditional media in accordance with the Polio Response Strategy's objective, allowing for real-time responses to mitigate rumors and disseminate accurate information.
- Develop materials for dissemination through different channels including but not limited to TV, radio, print media, advertisement, social media, town criers, etc.

Strategic Objective 3: Technical cooperation for risk mitigation

Priority Area 3.1: Risk mitigation management

Provide support to countries in developing risk mitigation plans

- Convene all EPI managers to provide an update on the global and regional polio current situation and the need to implement risk mitigation activities.
- Provide technical guidance to countries on the use of the district-level risk assessment tool to develop/update a prioritized risk mitigation plan.
- Provide technical guidance to countries to develop/update of a prioritized risk mitigation plan.
- Support very high and high risk countries on the use of the district-level risk assessment tool and the development of a prioritized risk mitigation plan.
- Facilitate the coordination between the RCC and the National Certification Committees (NCC) to strengthen the role of the NCC to promote ongoing support to the country for the development and implementation of risk mitigation activities.

Priority Area 3.2: Improve vaccination coverage and address immunity gaps

Provide technical cooperation to address immunity gaps through catch-up activities in the routine immunization program

- Provide technical guidance to countries to develop/update and implement different vaccination strategies for children who have not received a vaccine dose per the national schedule.
- Develop training materials for healthcare workers on vaccination strategies, including principles to reduce missed opportunities for vaccination and management of multiple injections, among others.

Provide technical cooperation to address immunity gaps through target and selective catch-up campaigns and Supplementary Immunization Activities (SIAs)

- Develop a framework to facilitate the decision-making process in the countries utilizing the district-level risk assessment tool to determine the highest priority and target areas for specific activities.
- Monitor vaccine coverage and analyze the susceptibility to each poliovirus serotype to identify age cohorts, estimate the target population for catch-up vaccination, and select appropriate polio vaccine for catch-up activities.
- Support countries to monitor vaccine coverage and analyze the susceptibility to each poliovirus serotype to identify age cohorts, estimate the target population for catch-up vaccination, and select the appropriate polio vaccine for catch-up activities.
- Support countries to define the adequate vaccination strategy to address immunity gaps.

Priority Area 3.3: Provide technical cooperation to strengthen surveillance systems

Improve acute flaccid paralysis (AFP) surveillance sensitivity and timeliness

- Develop/update training materials to strengthen sensitivity and timeliness in high and very high risk countries by expanding capacities at the national and subnational surveillance system to support case detection and notification.
- Develop training materials for clinicians to identify rapidly AFP cases and report appropriately to the surveillance system.
- Evaluate the AFP surveillance indicators performance to alert countries about the need to implement timely corrective actions with emphasis on very high and high risk countries.
- Provide guidance on institutional active case search of acute flaccid paralysis cases.
- Promote community-based surveillance in high and very high risk countries based on the district-level risk assessment tool results.
- Strengthen laboratory personnel capacities as well as the availability of related supplies and equipment for the detection and confirmation of polio while leveraging the capacities of Regional Reference laboratories.
- Sustain and strengthen processing capacity in polio laboratories.
- Strengthen the oversight of the quality assurance system in all polio laboratories.

Provide support to maintain environmental surveillance as a complement to AFP surveillance in selected countries

- Provide support to maintain the quality of environmental surveillance sites and the timeliness of collection and shipment of samples for Guatemala.
- Sustain environmental surveillance in Haiti.
- Implement environmental surveillance in two additional selected countries.

Priority Area 3.4: Preparedness and rapid response for an event and outbreak

Ensure adequate event and outbreak preparedness and timely response in case of an outbreak

- Socialize the Standard Operating Procedures: Responding to a Poliovirus Event or Outbreak version 4 for countries to update rapid response plans.
- Provide technical support to countries to update their polio event or outbreak response plan in accordance to the Standard Operating Procedures: Responding to a Poliovirus Event or Outbreak version 4.
- Build and train a multidisciplinary rapid response team.
- Update the technical guidance on how to conduct a polio outbreak or event simulation exercise in accordance to the Standard Operating Procedures: Responding to a Poliovirus Event or Outbreak version 4.
- Adapt the available Outbreak Response Assessment (OBRA) documents to the region.
- Build and train an OBRA team.
- Develop a list of the strategic inventory of supplies needed for epidemiological surveillance (PFA, environmental), vaccination, and case management in very high and high risk countries.
- Monitor vaccine inventory of bOPV and IPV and evaluate a potential immediate response to an event or outbreak.
- Facilitate the coordination among regulatory authorities to ensure that they are engaged and ready to respond in case of an outbreak.

FUNDING REQUIREMENTS

FUNDING REQUIREMENTS FOR 2023

USD 11,194,105

Required to respond with life-saving interventions over the remainder of the year.

FUNDING REQUIREMENTS BY PRIORITY ACTION (US\$)

	Priority Action	Amount (in USD)
1	Advocacy for an all-sector approach	666 585
2	Technical cooperation for risk communication	3 404 000
3	Technical cooperation for risk mitigation	7 123 520
GRAND TOTAL		11 194 105

HOW TO SUPPORT THIS APPEAL

Generous donations from the international community allows PAHO to deliver its technical cooperation and deploy its operational and logistics support to address existing and emerging public health challenges impacting the countries and territories of the Americas. PAHO highly values those donors who have already pledged funding to support the immediate health response operations to address the risk of reemergence of polio in the Region. The funding needs outlined in this appeal are essential to scale response capacities as well as to strengthen readiness and preparedness efforts.

PAHO ensures that funding is distributed in the most efficient manner and where it is most needed, in coordination with public health authorities, United Nations agencies and other humanitarian partners.

Here are some ways how private or public organizations and individuals can contribute to this donor appeal.

Donating directly to this appeal

Financial contributions from governmental aid agencies, multilateral institutions, foundations and philanthropic organizations, and other public and private sector partners are one of the most valuable and effective forms of support to the health emergency response. The main characteristic of a financial donation is its flexibility to support an agile response. Those funds enable PAHO to respond in a fast and efficient way, addressing the most acute needs and ensuring that the actions funded are fully aligned with the Region's priority public health priorities.

Donating organizations are invited to make cash contributions to support one, several or all priority actions highlighted in this appeal. To make a donation to PAHO, please contact Julie Mauvernay (mauvernj@paho.org).

Individual donations can also make a difference and help save lives by supporting the delivery of essential supplies and critical assistance to people in need. Individuals can contribute to PAHO's polio response efforts by mailing checks to Pan American Health Organization, 525 23rd St NW, Washington, DC, 20037.

Donating in-kind resources and services

PAHO encourages the private and public sectors to align response efforts as outlined in this appeal. Donations from corporations must comply with PAHO/WHO's guidelines and roadmap for engagement with the private sector.

To make an in-kind donation of goods and services, please contact Julie Mauvernay (mauvernj@paho.org) or donate@paho.org to guarantee coherent priorities, minimize gaps and duplication in the health response, and ensure quality assurance of the goods offered.

PAHO appreciates and thanks in advance its donors for their generous contributions to save lives. Contributions to this appeal will be reported on PAHO's webpage to acknowledge and give visibility to donors' generosity, report on funding received as well as remaining financial gaps.

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