Issue 6 | July 2025

ASEAN
BIOLOGICAL THREATS
SURVEILLANCE CENTRE

POLIO
In the ASEAN Region
FOCUS REPORT

With Support by:

Korea Disease Control and Prevention Agency

In partnership with Canada

ASSOCIATION OF SOUTHEAST ASIAN NATIONS

ASEAN
BIOLOGICAL THREATS
SURVEILLANCE CENTRE

Editorial

PUBLISHER
ASEAN BIOLOGICAL THREATS SURVEILLANCE CENTRE

EDITORIAL ADDRESS
ASEAN BIOLOGICAL THREATS SURVEILLANCE CENTRE
Health Policy Agency
Ministry of Health of Indonesia,
Building 6- Center of Global Health Strategy and Governance Policy, 2nd floor
Percetakan Negara No. 29 Johar Baru, Jakarta Pusat, Indonesia 10560
E-mail: support@aseanbiosurveillance.org
E-mail: data@aseanbiosurveillance.org

Table of Contents

POLIO FOCUS REPORT

ASEAN BIOLOGICAL THREATS SURVEILLANCE CENTRE

Acronyms and Abbreviations

AFP = Acute Flaccid Paralysis
aVDPVs = Ambiguous Vaccine-Derived Polioviruses
AVSSR = Action Plan for Vaccine Security and Self-Reliance
bOPV = Bivalent oral poliovirus vaccine
Bru HIMS = Brunei Health Information Management System
CHSI = Center for Health Statistics and Information
cMYP = country's Comprehensive Multi-Year Plan
CSF = Cerebrospinal Fluid
cVDPV = Circulating Vaccine-Derived Polioviruses
cVDPV2 = Circulating Vaccine-Derived Poliovirus Type 2
EIR = Electronic Immunization Register
EPI = Expanded Programme on Immunization
ERC = Expert Review Committee
EUL = Emergency Use Listing
GAP III = Gender Action Plan III
GBS = Guillain-Barré syndrome
GPEI = Global Polio Eradication Initiative
IPV = Inactivated Polio Vaccine
iVDPVs = Immunodeficiency-Associated Vaccine-Derived Polioviruses
mOPV = Monovalent Oral Poliovirus Vaccines
MoU = Memorandum of Understanding
NIDs = National Immunization Days
NIP = National Immunisation Programme
nOPV2 = novel Oral Poliovirus Vaccine Type 2
NPEC = National Polio Expert Committee
OPV = Oral Polio Vaccine
RT-PCR = Real-Time Reverse Transcription Polymerase Chain Reaction
SDG = Sustainable Development Goal
SEARO = South-East Asia Regional Office
SIAs = Supplementary Immunization Activities
tOPV = Trivalent oral poliovirus vaccine
UNICEF = United Nations International Children's Emergency Fund
VAPP = Vaccine-Associated Paralytic Poliomyelitis
VDPV = Vaccine-Derived Poliovirus
VPDs = vaccine-preventable diseases
WHO = World Health Organization
WPRO = Western Pacific Regional Office
WPV = Wild poliovirus
WPVs = Wild polioviruses
WPV1 = Wild poliovirus type 1

POLIO

Introduction

Poliomyelitis (polio) is an acute, highly infectious viral disease that primarily affects young children and targets the nervous system, potentially leading to permanent paralysis and, in some cases, death (WHO, n.d). The disease has been present for millennia, with depictions of individuals exhibiting withered limbs found in ancient Egyptian artifacts. However, the first clinical description was made by Dr. Michael Underwood in 1789, and the condition was formally recognized as poliomyelitis by Jakob Heine in 1840. Polio became a major public health concern during the late 19th and early 20th centuries, with frequent and often deadly epidemics. A 1916 outbreak in New York City alone caused over 2,000 deaths, and the peak of the U.S. epidemic in 1952 resulted in more than 57,000 cases and over 3,000 deaths. Advances in virology led to a critical breakthrough in 1949, when John Enders, Thomas Weller, and Frederick Robbins successfully cultivated poliovirus in human tissue, earning them the Nobel Prize in 1954 and paving the way for vaccine development.

In 1955, Jonas Salk introduced the Inactivated Polio Vaccine (IPV), followed by Albert Sabin's Oral Polio Vaccine (OPV) in the early 1960s (WHO, n.d). OPV, a live-attenuated vaccine, was particularly well-suited for mass immunization campaigns due to its ease of administration and its capacity to interrupt viral transmission. With the inclusion of OPV in national immunization programmes, many countries significantly reduced their polio burden.

In 1988, the World Health Assembly launched the Global Polio Eradication Initiative (GPEI), a global partnership involving World Health Organization (WHO), Rotary International, United Nations International Children's Emergency Fund (UNICEF), and other stakeholders, with the goal of eradicating polio worldwide (WHO, n.d). At the time of the initiative's launch, polio was endemic in 125 countries, paralyzing over 350,000 children annually. Through intensive immunization campaigns, surveillance, and coordinated global response efforts, the incidence of polio declined by more than 99%. Regions including the Americas (1994), the Western Pacific (2000), South-East Asia (2014), and Africa (2020) have been certified polio-free. Despite the success, challenges remain, particularly with the emergence of Circulating Vaccine-Derived Polioviruses (cVDPVs) in areas with low immunization coverage. While OPV remains safe and effective, under immunized populations are at risk of outbreaks due to viral reversion. Addressing these risks requires maintaining high population immunity, strengthening health systems, and ensuring equitable access to vaccines. Although wild poliovirus remains endemic in only two countries, the final phase of eradication demands sustained political commitment, community engagement, and global cooperation.

Methods

This report applies a comprehensive literature review to examine the global poliomyelitis landscape, with an emphasis on the ASEAN region. Data were sourced from major scientific databases such as PubMed, Embase, and Scopus, as well as official reports from the WHO, ASEAN Member States (AMS), and other authoritative publications. Information on disease incidence, diagnostic criteria, preventive measures, and policy strategies was also drawn from credible institutional and media sources. This integrated approach supports a detailed analysis of current trends, epidemiological dynamics, and key challenges in managing poliomyelitis across the ASEAN Region.

Case Definition and Clinical Features

Case Definition

At the inception of the GPEI, most countries were relying exclusively on clinical symptoms for the identification of polio cases (WHO, 2024). Polio was generally reported as part of broader disease surveillance systems, often on an annual basis. However, due to the nature of polio and its transmission dynamics, this approach made timely detection and response to outbreaks challenging. As various illnesses have the potential to manifest with symptoms like polio, a more sensitive and responsive surveillance method was required.

In response to this challenge, health systems have adopted Acute Flaccid Paralysis (AFP) as the main syndrome for surveillance (WHO, 2024). This approach facilitates the rapid identification, reporting, and investigation of suspected polio cases. An AFP case is defined as any child under the age of 15 who experiences a sudden onset of either limp paralysis or muscle weakness from any underlying cause. Additionally, the term encompasses individuals of all ages who manifest paralytic symptoms if poliomyelitis is suspected by a healthcare professional.

Once a suspected AFP case is identified and stool specimens are collected and tested, the case must undergo final classification within 90 days from the onset of paralysis as figure 1 (WHO, 2024). This classification is based on laboratory findings and the adequacy of the stool samples collected. For cases with inadequate specimens, final classification is determined by the National Polio Expert Committee (NPEC) or its equivalent, such as the Expert Review Committee (ERC) or National Polio Expert Panel, depending on the country context.

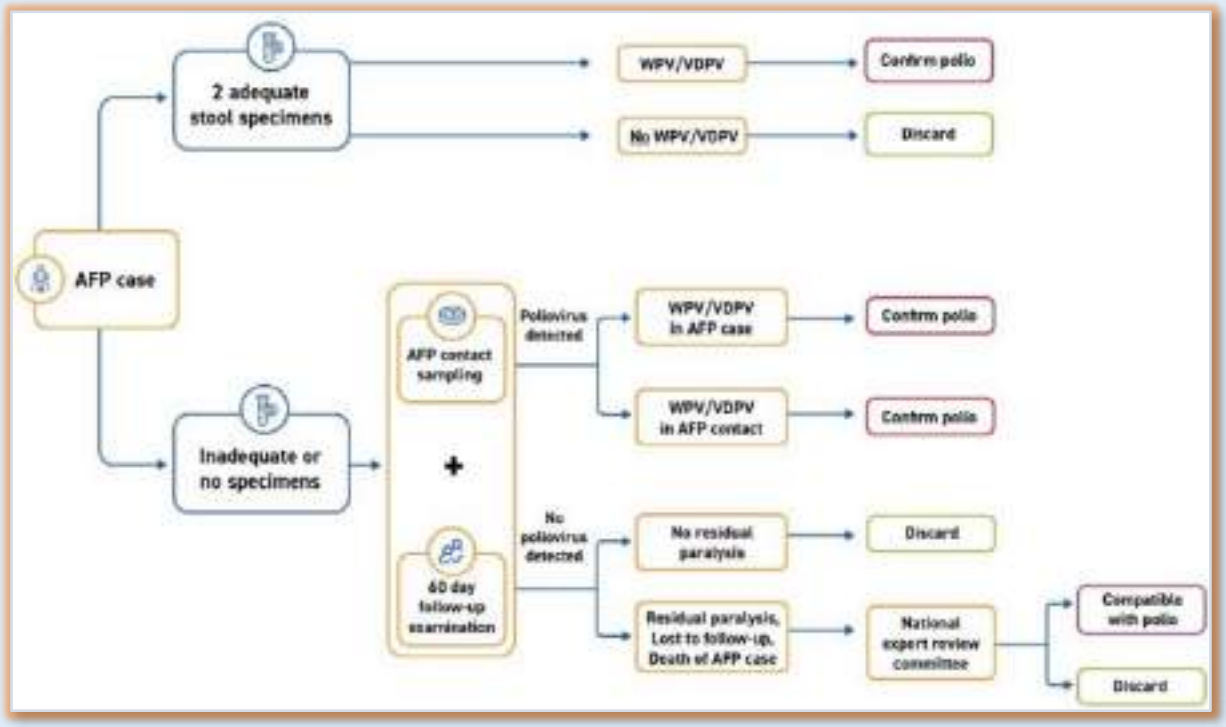


Figure 1. Virologic AFP classification scheme
(Source: https://iris.who.int/bitstream/handle/10665/376603/9789240089662-eng.pdf)

To review AFP cases with incomplete data, the NPEC may assess Vaccine-Associated Paralytic Poliomyelitis (VAPP) cases, particularly those involving novel oral poliovirus vaccine type 2 (nOPV2). These may also be referred to a dedicated Causality Assessment Committee for specialized review. In some settings, the NPEC carries out both surveillance and causality assessment functions. The final classification criteria are summarized in the following **Table 1** (WHO, 2024).

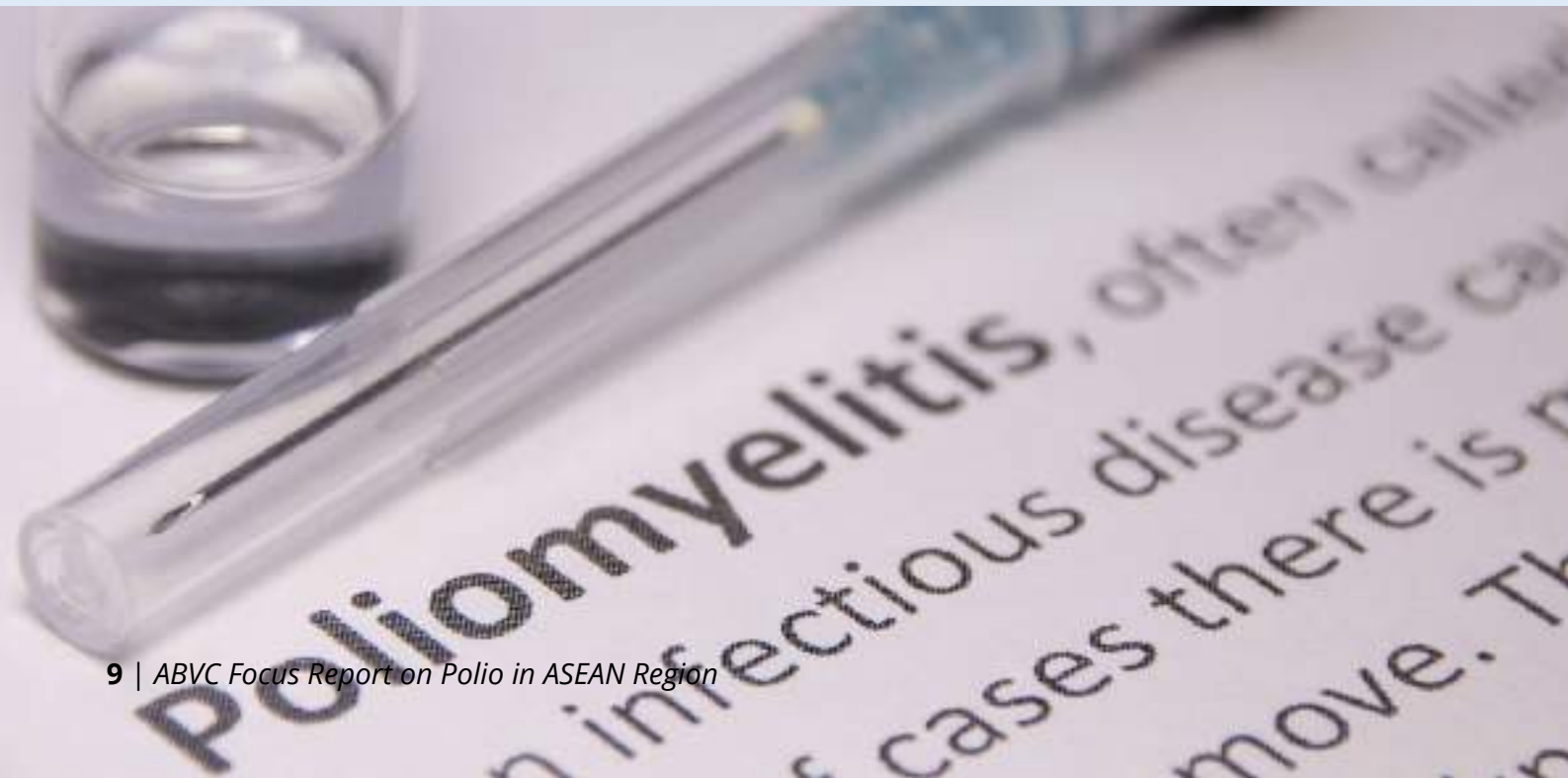


Table 1. Classification definitions of AFP

Stool Specimen Status	Case Classification	Definition
Adequate	**Confirmed Polio**	If WPV or VDPV was detected in any stool specimens from either the case or contacts
	Discarded (Non-Polio AFP)	If no WPV or VDPV was detected in adequate stool specimens from either the case or contacts.
Inadequate	**Confirmed Polio**	If WPV or VDPV was detected in any stool specimens from either the case or contacts.
	Compatible with Polio	If the NPEC has concluded after reviewing (1) No WPV or VDPV was detected in any stool specimen from either the case or its contacts; (2) there is residual paralysis (or weakness) at the time of the 60-day follow-up visit, or that the follow-up was not done due to death or loss to follow-up of the case; and (3) Upon review, the possibility of polio could not be ruled out.
	Discarded (Non-Polio AFP)	If no poliovirus was detected from the case or his/her contacts, and no residual paralysis was observed at the 60-day follow-up visit of the case, OR if the NPEC concludes after reviewing (1) No poliovirus was detected in any stool specimens from either the case or contacts; (2) Even though there was residual paralysis, or the case was lost to follow-up, or had died, there was sufficient evidence (clinical evidence and supportive documentation) to discard the case as non-polio.

Wild polioviruses (WPVs) are the naturally occurring strains of poliovirus circulating in the environment (GPEI, n.d.). Before the 20th century, large-scale outbreaks were rare. However, improvements in sanitation delayed exposure to the virus until later childhood, when maternal antibody protection had waned, increasing the risk of paralysis. There are three serotypes: type 1, type 2, and type 3. Symptomatically, all three strains are identical, in that they cause irreversible paralysis or even death. But there are genetic and virologic differences which make these three strains three separate viruses that must each be eradicated individually. Immunity to one serotype does not provide protection

against the others. Type 2 wild poliovirus was declared eradicated in September 2015, with the last case detected in India in 1999, and type 3 was declared eradicated in October 2019, last detected in 2012 (WHO, 2019). However, type 1 WPV remains in circulation.

Vaccine-derived polioviruses (VDPVs) are mutated strains of poliovirus originally derived from the weakened (attenuated) live virus contained in the oral polio vaccine (OPV) (GPEI, 2016). VDPVs fall into three categories: **circulating VDPVs (cVDPVs)**, which show evidence of person-to-person spread and can cause outbreaks of paralytic poliomyelitis in areas with low vaccination rates; **immunodeficiency-associated VDPVs (iVDPVs)**, found in individuals with primary immunodeficiencies who excrete the virus for extended periods; and **ambiguous VDPVs (aVDPVs)**, which are isolates that can't be definitively classified as either cVDPV or iVDPV even after thorough investigation. Unlike cVDPVs, there's no clear evidence that iVDPVs transmit from person to person or circulate within a community.

Transmission

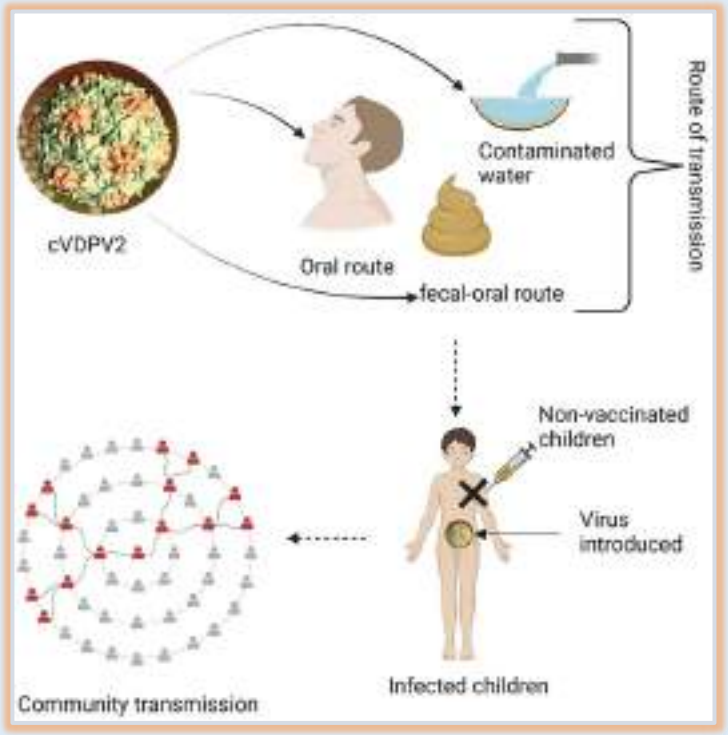


Figure 2. The mode of transmission of Circulating Vaccine-Derived Poliovirus Type 2 (cVDPV2) infection (Source: https://ejim.springeropen.com/articles/10.1186/s43162-025-00421-0#Fig2)

Humans are the only known reservoir of poliovirus (WHO, 2024). Transmission occurs through several pathways, with the faecal–oral route being the predominant mode, particularly in low-income and developing countries (WHO, 2004). The virus replicates effectively within the intestinal tract and is typically excreted in faeces for two to four weeks, although excretion may persist for a longer period in some individuals. Shedding is often intermittent and influenced by the individual's immune status and competence. Prior immunity, either from past natural infection with wild poliovirus or vaccination with OPV, can significantly limit the duration and intensity of viral shedding. Use of enhanced-potency IPV and the presence of other enteric infections may also modestly reduce faecal excretion.

Poliovirus primarily affects infants and young children, especially those residing in settings with inadequate sanitation and poor hygiene (WHO, 2004). In some environments (overcrowded, poor sewage infrastructure, and unsafe drinking water), the faecal–oral route remains the dominant mode of transmission. Conversely, in settings with improved hygiene and sanitation, respiratory transmission becomes relatively more significant. The virus can also replicate in the upper respiratory tract and may be identified in throat swabs and nasopharyngeal secretions during the early stages of infection. These secretions can facilitate close-contact transmission, either via direct person-to-person interaction, large respiratory droplets, or contaminated surfaces (fomites).

The seasonality of poliovirus circulation varies by geographical region and climate (WHO, 2004). In tropical and subtropical areas, transmission tends to be continuous throughout the year or increases during the rainy season. In contrast, temperate regions have historically experienced a peak in summer and early autumn. Meanwhile, vaccine-like polioviruses derived from OPV may be detected year-round in countries with ongoing OPV use or during periods of mass immunization campaigns, such as National Immunization Days (NIDs).

Risk Factors and Risk Groups

Epidemiological and social determinants, such as individual-level and community-level factors, influence the risk of poliovirus transmission and outbreaks. Children under the age of five, who represent the most vulnerable age group (WHO, 2025a). However, individuals of any age who are unvaccinated or inadequately immunized remain susceptible to infection.

Occupation of parents or caregivers can affect exposure risk, especially in limited sanitation or where hygienic practices are compromised due to occupational conditions (WHO, 2024). Ethnic background and belonging to special populations, such as refugees, internally displaced persons (IDPs), migrant or mobile groups, and individuals residing in security-compromised areas, increase vulnerability due to challenges in accessing routine immunization, health services, and safe water and sanitation.

Mobility and social interaction patterns play a significant role in the spread of poliovirus (WHO, 2024). Recent travel by the case or household members, particularly outside the district or country within 35 days prior to the onset of paralysis, may serve as a conduit for virus importation or transmission across geographic boundaries. Similarly, participation in large-scale public gatherings, such as markets, fairs, or religious events within one month of symptom onset poses a risk for widespread exposure and secondary transmission. The presence of visitors to households during this time further increases the risk of poliovirus introduction and circulation within communities. Thorough epidemiological investigation and risk assessment are crucial for identifying transmission links and implementing targeted public health response.

A consistent feature observed across all cVDPV outbreaks is low population immunity, typically resulting from inadequate oral polio vaccine (OPV) coverage and the absence of endemic wild poliovirus of the same serotype in the affected area (WHO, 2004). These conditions create an immunological gap that allows mutated vaccine-derived strains to circulate and, in some cases, regain neurovirulence. Additional risk factors associated with cVDPV transmission mirror those of wild poliovirus outbreaks, including high population density, elevated birth rates, insufficient hygiene, poor sanitation infrastructure, and the presence of a tropical climate, all of which facilitate sustained person-to-person transmission of enteric viruses.

Clinical Presentation

Poliovirus infection can lead to various clinical outcomes, including asymptomatic cases to severe paralytic disease and death (WHO, 2024). The incubation period varies depending on the disease form, with non-paralytic poliomyelitis typically 3 to 6 days and paralytic poliomyelitis ranging from 7 to 21 days, with extremes between 3 and 35 days. Approximately 90% to 95% of infections are asymptomatic, going undetected without active surveillance. Among symptomatic cases, three principal clinical syndromes may be observed in figure 3, below (WHO, 2024):

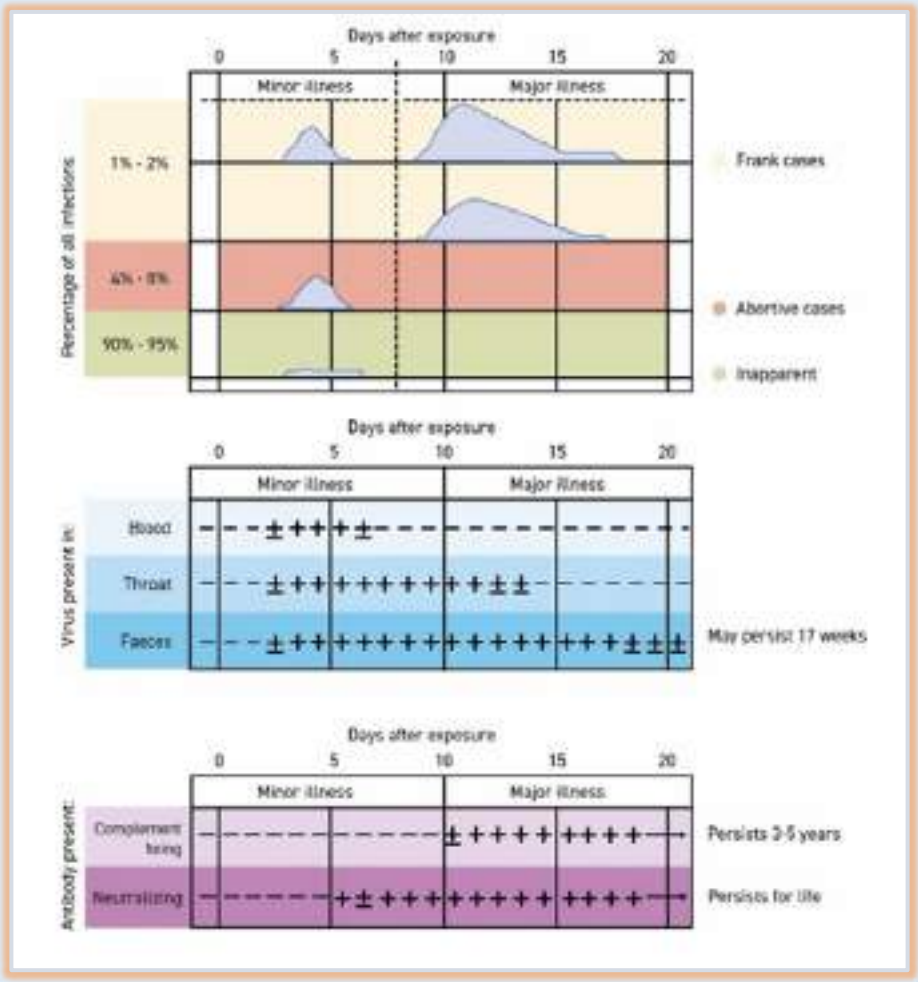


Figure 3. Phases of occurrence of symptoms in poliomyelitis infection
(Source: https://iris.who.int/bitstream/handle/10665/376603/9789240089662-eng.pdf)

1. **Abortive polio,** the mildest form, occurs in 4–8% of cases and presents as a non-specific febrile illness. Symptoms include low-grade fever, sore throat, vomiting, abdominal pain, loss of appetite, and malaise. Recovery is typically rapid and complete, with no paralysis. The condition is often indistinguishable from other mild viral infections affecting the mild respiratory tract or gastrointestinal manifestations.

2. **Non-paralytic aseptic meningitis** occurs 1-2% of individuals, headache, neck, back and/or abdominal, extremity pain, fever, vomiting, lethargy and irritability after a prodromal illness like abortive polio. Recovery typically occurs within 2 to 10 days and is not differentiated from another viral meningitis.
3. **Paralytic poliomyelitis** is a rare infection, affecting less than 1% of cases. It typically follows a minor febrile illness, with neurological symptoms emerging 1-10 days after the prodromal symptoms and progressing for 2–3 days. It begins with muscle pain, spasms, and return of fever, followed by flaccid paralysis with reduced deep tendon reflexes within 72 hours, but sensory function and cognitive status remain intact in affected individuals.

Based on the distribution of paralysis, poliomyelitis is classified into three primary forms as spinal, bulbar, and Spino-bulbar poliomyelitis (WHO, 2024). Characteristically, the paralysis affects specific muscle groups in an asymmetrical pattern, with the lower limbs more frequently involved than the upper limbs. In many cases, only one leg or a portion of a limb is affected. The paralysis is flaccid in nature, marked by muscle weakness and reduced tone. In a very small number of cases, the virus invades the motor neurons that control the facial, pharyngeal, and respiratory muscles, leading to impairments in swallowing, speech, and breathing. This form, known as bulbar poliomyelitis, is particularly severe and can be life-threatening due to respiratory failure. Among individuals with paralytic poliomyelitis, approximately 2–10% succumb to the disease, primarily due to involvement of the respiratory musculature. About 10% make a full recovery, while the remaining majority experience residual paralysis or permanent disability. The prognosis for neurological recovery is typically determined within six months following the onset of paralytic symptoms.

Clinical Diagnostic

Virus isolation in cell culture remains the most sensitive method for confirming poliovirus infection, with the highest yield obtained from stool specimens (WHO, 2024). While poliovirus may also be isolated from pharyngeal swabs, recovery from blood or Cerebrospinal Fluid (CSF) is uncommon and typically less reliable. To optimize virus detection, the standard protocol involves collecting two stool specimens from individuals with suspected poliomyelitis, 24 hours apart, and ideally within 14 days of symptom onset. This timing maximizes the

likelihood of viral excretion and successful isolation. Once isolated in culture, the virus undergoes Real-Time Reverse Transcription Polymerase Chain Reaction (RT-PCR) to differentiate wild-type polioviruses from vaccine-derived or vaccine-like strains. This process, referred to as intratypic differentiation, is essential for determining the epidemiological significance of the isolate. Further molecular characterization of the virus is performed to identify its genetic profile. Maintaining a molecular reference library of poliovirus strains enables public health laboratories to trace the geographic origin and transmission pathways of newly detected isolates.

The clinical presentation of AFP requires differentiation from several other neurological conditions (WHO, 2024). The primary differentials include paralytic poliomyelitis, Guillain-Barré syndrome (GBS), and transverse myelitis. Additional, less common etiologies may include traumatic neuritis, encephalitis, meningitis, other enteroviral infections, and central nervous system tumours. Paralytic poliomyelitis can be distinguished from these other causes by a characteristic set of features: asymmetric flaccid paralysis, the presence of fever at the onset of paralysis, rapid progression of motor deficits, and the persistence of residual paralysis at 60 days post-onset, typically with preservation of sensory function. These clinical markers are crucial for differentiating polio from other causes of AFP in both endemic and polio-free settings.

Epidemiology

Global Situation

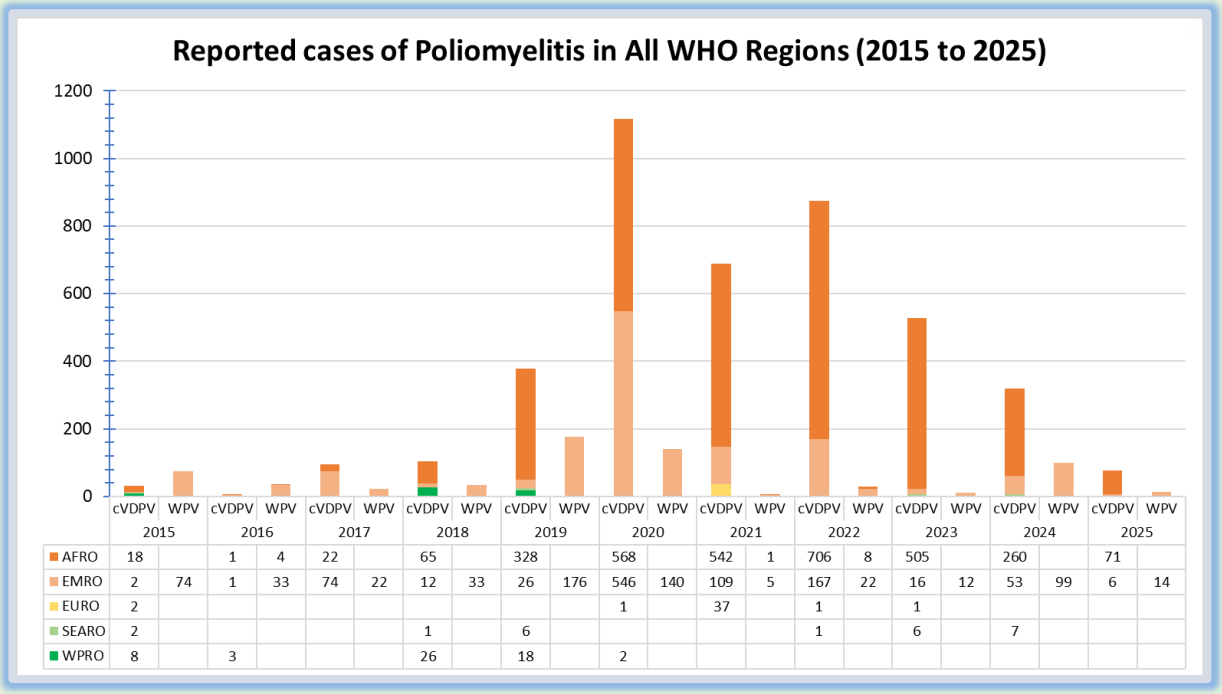
In the early 20th century, polio was one of the most feared diseases in industrialized countries, paralyzing hundreds of thousands of children each year (WHO, 2025a). However, the introduction of effective vaccines in the 1950s and 1960s led to its control and near elimination as a public health problem. In developing countries, polio was recognized later as a major issue, with lameness surveys in the 1970s revealing widespread prevalence. This prompted the introduction of routine immunization worldwide during the 1970s, helping to reduce cases.

In 1988, the World Health Assembly adopted a resolution for the worldwide eradication of polio, marking the launch of the GPEI, a global public-private partnership (WHO, 2025a). Since then, the incidence of polio worldwide has been reduced by 99%, and the world stands on the threshold of eradicating a human disease globally for only the second time in history, after smallpox in 1980. Wild poliovirus cases have decreased by over 99% since 1988, from an estimated 350,000 cases in more than 125 endemic countries, to two endemic countries.

Currently, wild poliovirus persists as an endemic virus in only two countries, and global polio cases have declined by 99%. Of the three wild poliovirus types, type 2 was last detected in 1999 and declared eradicated in 2015, while type 3 was last seen in 2012 and declared eradicated in 2019 (Figure 4).

Figure 4. Map of Polio-affected countries
(Source: https://polioeradication.org/about-polio/where-we-work/)

From 2015 to 2024, the WHO recorded 4,143 cases of cVDPV and 629 cases of wild WPV. The highest number of WPV cases was reported in 2019 (176 cases), while cVDPV cases peaked in 2020 with 1,117 cases. Over the decade, the African Region (AFRO) accounted for nearly 73% of global cVDPV cases (3,015 of 4,143), while the Eastern Mediterranean Region (EMRO) reported over 90% of global WPV cases (616 of 629). In 2025 alone, 14 WPV cases—all in EMRO—and 77 cVDPV cases (71 in AFRO and 6 in EMRO) were reported as of the end of June (Figure 5).

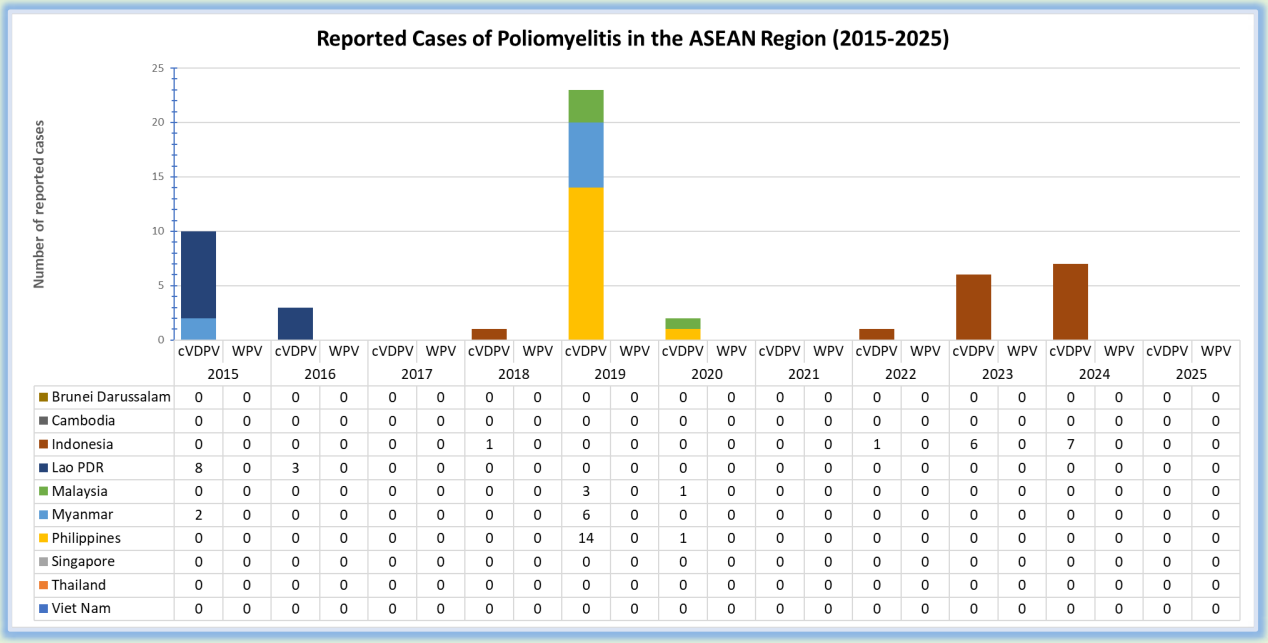


	cVDPV	WPV	cVDPV	WPV	cVDPV	WPV	cVDPV	WPV	cVDPV	WPV	cVDPV	WPV	cVDPV	WPV	cVDPV	WPV	cVDPV	WPV	cVDPV	WPV
	2015		2016		2017		2018		2019		2020		2021		2022		2023		2024		2025	
AFRO	18		1	4	22		65		328		568		542	1	706	8	505		260		71	
EMRO	2	74	1	33	74	22	12	33	26	176	546	140	109	5	167	22	16	12	53	99	6	14
EURO	2										1		37		1		1					
SEARO	2						1		6						1		6		7			
WPRO	8		3				26		18		2											

Figure 5. Reported cases of poliomyelitis in All WHO Regions (2015-2025)

Burden of Poliomyelitis in the ASEAN Region

Poliomyelitis, particularly cVDPV, remains a concern in the ASEAN region. From 2015 to 2024, the region recorded a total of 29,917 AFP cases, including 53 cVDPV cases and zero WPV cases. As of 2025, the region has reported 1,591 AFP cases, with no confirmed poliomyelitis cases of any type. Further details on reported poliomyelitis cases by country are presented in Figure 5.



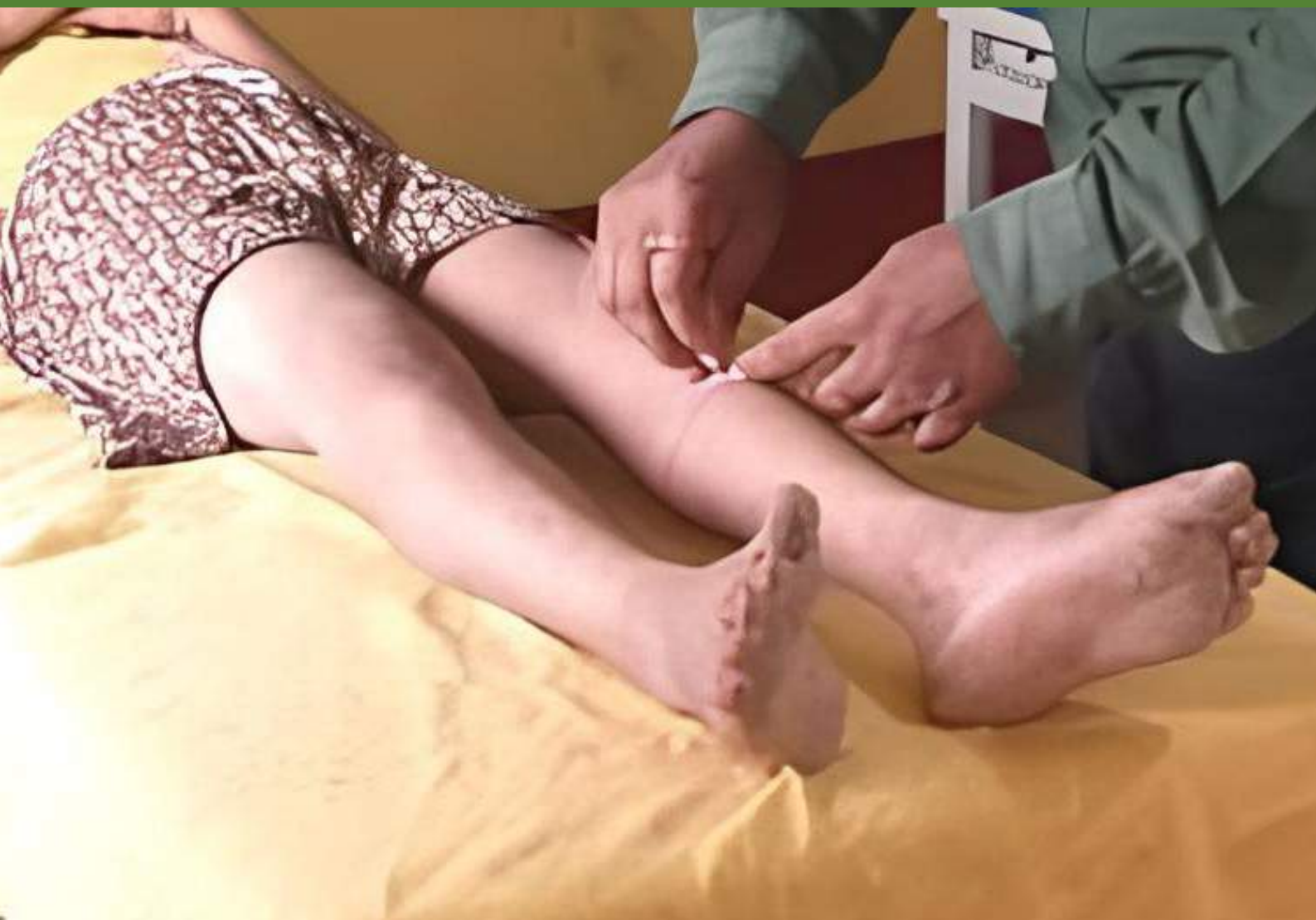
	2015		2016		2017		2018		2019		2020		2021		2022		2023		2024		2025	
	cVDPV	WPV	cVDPV	WPV	cVDPV	WPV	cVDPV	WPV	cVDPV	WPV	cVDPV	WPV	cVDPV	WPV	cVDPV	WPV	cVDPV	WPV	cVDPV	WPV	cVDPV	WPV
Brunei Darussalam	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cambodia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Indonesia	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	6	0	7	0	0	0
Lao PDR	8	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Malaysia	0	0	0	0	0	0	0	0	3	0	1	0	0	0	0	0	0	0	0	0	0	0
Myanmar	2	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0
Philippines	0	0	0	0	0	0	0	0	14	0	1	0	0	0	0	0	0	0	0	0	0	0
Singapore	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thailand	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Viet Nam	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Figure 6. Reported cases of poliomyelitis in the ASEAN Region (2015-2025)

Figure 6 illustrates that from 2015 to 2024, no poliomyelitis cases were recorded in the years 2017 and 2021. Throughout the period, Brunei Darussalam, Cambodia, Singapore, Thailand, and Viet Nam reported no cases. However, five ASEAN Member States reported circulating vaccine-derived poliovirus (cVDPV) cases:

a. Indonesia reported 15 cases (one in both 2018 and 2022, 6 in 2023, and 7 in 2024);
b. Lao PDR reported 11 cases (eight in 2015 and three in 2016);
c. Malaysia reported four cases (three in 2019 and one in 2020);
d. Myanmar reported eight cases (two in 2015 and six in 2019); and
e. Philippines reported 15 cases (14 in 2019 and one in 2020).

Case Management and Prevention



Case Management

There is currently no specific antiviral treatment for poliomyelitis. Individuals presenting with suspected AFP should be referred immediately to a healthcare facility for clinical evaluation and management (WHO, 2024). Particular attention should be given to respiratory complications, especially those indicating potential diaphragmatic involvement, as these may require urgent intervention. In cases of paralytic poliomyelitis, comprehensive supportive care under the supervision of a qualified physician is essential to manage symptoms and prevent further complications.

Prevention and Vaccines

Poliomyelitis is a preventable disease, with immunization serving as the primary means of protection (WHO, n.d). When administered in multiple doses, polio vaccines provide strong, long-term immunity, effectively protecting most children throughout their lives. The widespread use of polio vaccines has led to a dramatic global reduction in polio incidence and remains central to eradication efforts. The development of vaccines capable of preventing paralytic polio was one of the most significant public health achievements of the 20th century. Immunization not only protects individuals but also contributes to herd immunity. When a high percentage of the population is vaccinated, the virus cannot find susceptible hosts, halt transmission and paving the way for eradication.

Currently, six types of polio vaccines are used globally to interrupt transmission (WHO, 2024). These vaccines fall into two main categories: IPV and OPV. Each has unique characteristics and roles in polio eradication efforts:

1. **Oral Polio Vaccine (OPV)**

   Oral poliovirus vaccines play a vital role in global eradication efforts by using attenuated strains that replicate in the gut but are less likely to invade the central nervous system (WHO, 2024). They are widely adopted in countries that have halted poliovirus transmission due to their safety, effectiveness, low cost, and ease of administration. However, in settings with low coverage, the vaccine virus may circulate, mutate, and regain neurovirulence within 12–18 months, potentially causing cVDPV outbreaks. To eliminate this risk, OPV use will cease globally once wild poliovirus is eradicated, preventing reintroduction of vaccine-derived strains.

Table 2. Indications of use for OPVs by serotype

OPV Type	Serotype	Indications for use
Monovalent oral poliovirus vaccines (mOPVs)	Type 1 (mOPV1) Type 2 (mOPV2) Type 3 (mOPV3)	MOPVs target individual serotypes to elicit strong immune responses. While mOPV2 is stockpiled for emergency use in the event of cVDPV2 outbreaks, it is gradually being replaced by the nOPV2, which offers improved genetic stability.
Novel oral polio vaccine type (nOPV)	Type 2 (nOPV2)	nOPV2 offers similar protection as mOPV2 with enhanced stability, reducing the risk of VDPV2, particularly in populations with low immunity. Since 2022, nOPV2 has been authorized for use exclusively in response to type 2 outbreaks under the WHO's Emergency Use Listing (EUL).
Bivalent oral poliovirus vaccine (bOPV)	Type 1 and type 3 (bOPV)	bOPV induces strong immunity against types 1 and 3 but does not protect against type 2.
Trivalent oral poliovirus vaccine (tOPV)	Type 1, type 2 and type 3 (tOPV)	Since April 2016, tOPV has been withdrawn and replaced with bOPV in routine immunization programs and for outbreak response targeting poliovirus types 1 and 3. Its use remains permissible in certain outbreak scenarios, particularly when there is co-circulation of poliovirus serotypes 1 and 2.

2. Inactivated Polio Vaccine (IPV)

Inactivated poliovirus vaccine contains inactivated (killed) strains of all three poliovirus serotypes and is administered via intramuscular or intradermal injection by trained healthcare personnel (WHO, 2024). IPV induces systemic immunity by generating antibodies in the bloodstream, which prevent poliovirus from reaching the central nervous system, thereby protecting against paralysis. It is used in routine immunization and, in certain contexts, for outbreak response. However, because IPV does not interrupt virus transmission, OPV remains the preferred option for outbreak response, including in countries that utilize IPV exclusively in their immunization programs.

IPV offers several advantages, including a high safety profile due to its inactivated formulation, which eliminates the risk of vaccine-associated paralytic poliomyelitis (VAPP) (WHO, 2024). It also induces strong protective immunity in many recipients. However, IPV has notable limitations. It generates minimal mucosal immunity in the intestines, meaning that vaccinated individuals can still become infected with wild poliovirus, shed the virus in their

faeces, and contribute to ongoing transmission.

Additionally, IPV administration requires trained healthcare personnel and sterile injection equipment, posing logistical challenges. Furthermore, IPV is significantly more expensive than OPV, with costs typically exceeding those of OPV by more than five times.

Since April 2019, all 194 WHO Member States have introduced at least one dose of injectable IPV (WHO, 2020a). Figure 7 shows the coverage of global and regional polio vaccines, including the first and second dose of IPV and the third doses of any of poliovirus vaccine (POL3) from 2014 to 2023 (WHO, 2025b).

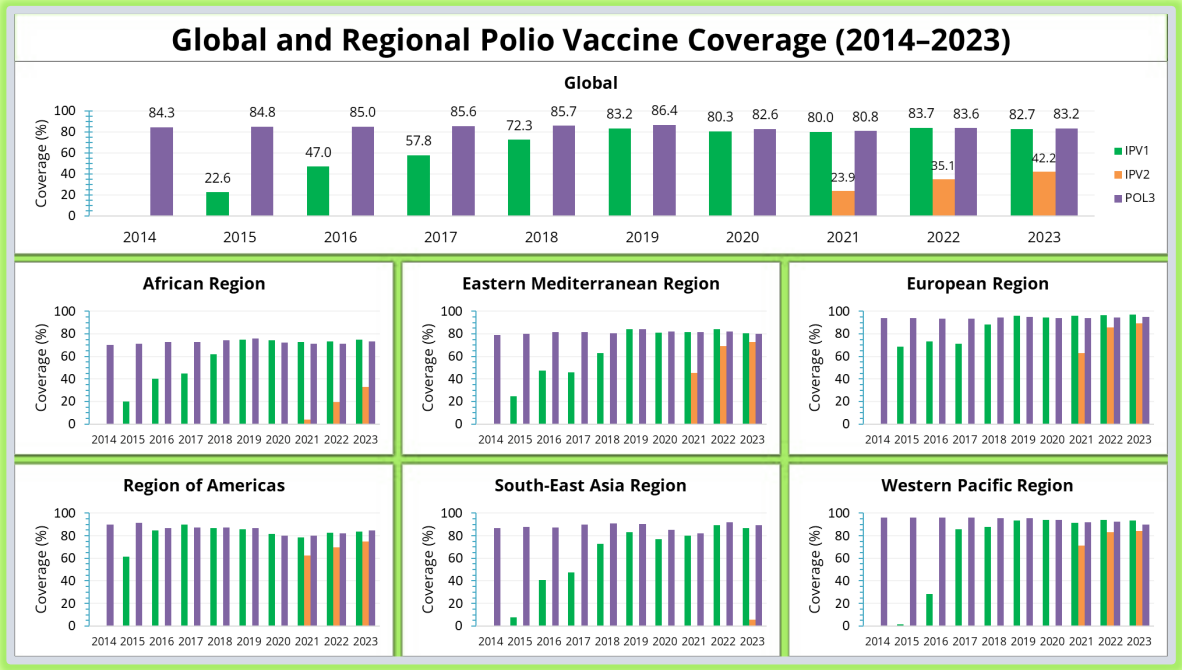


Figure 7. Global and Regional Polio Vaccine Coverage from 2014 to 2023
(Source: https://immunizationdata.who.int/global/wiise-detail-page/poliomyelitis-vaccination-coverage)

Figure 8 presents polio vaccine coverage in ASEAN countries from 2015 to 2024, as reported to WHO (WHO, 2025b). Coverage levels varied across member states, with Brunei Darussalam consistently achieving nearly 100% each year. The data, based on administrative reports via the WHO/UNICEF Joint Reporting Form, may differ from actual coverage.

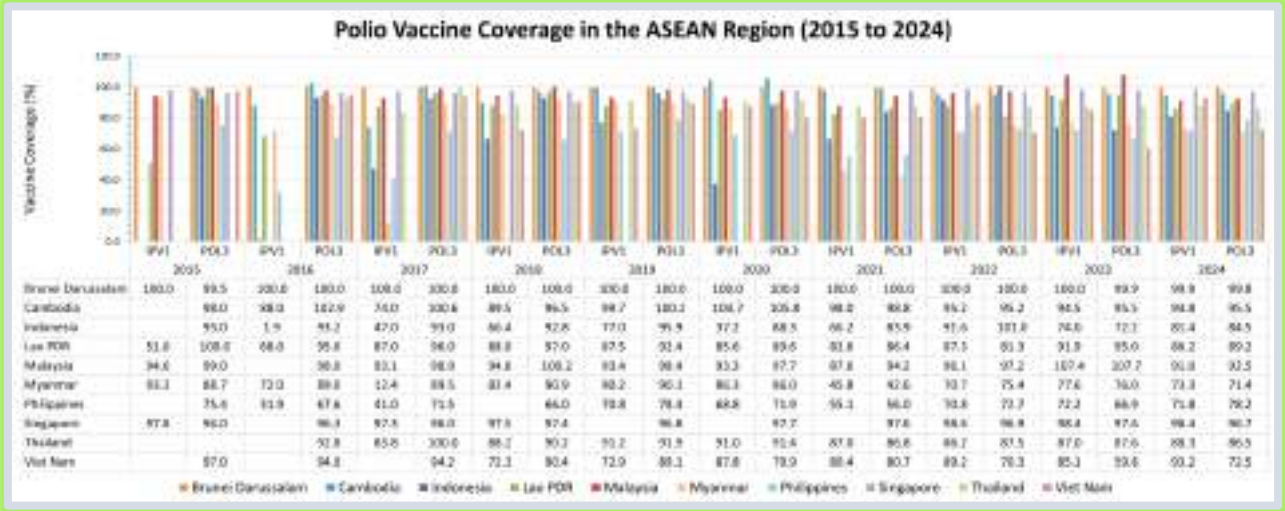


Figure 8. Vaccine Coverage in the ASEAN Region from 2015 to 2024 (source: https://immunizationdata.who.int/global/wiise-detail-page/poliomyelitis-vaccination-coverage)

Control Measures Strategy

Control Measures in Global

In 2021, the GPEI launched a new strategy to maximize vaccination opportunities, strengthen collective ownership and accountability, and maintain urgency aligned with polio's designation as a Public Health Emergency of International Concern since 2014 (WHO, 2021a). The Polio Eradication Strategy 2022–2026 outlines innovative solutions to overcome persistent barriers while enhancing the core strategies that have driven progress so far. This comprehensive approach shifts the focus beyond purely epidemiological efforts, aiming for transformational and sustainable eradication.

With a vision to achieve eradication and sustain a polio-free world, the Polio Eradication Strategy 2022–2026 sets two main goals: 1) permanently interrupt all poliovirus transmission in endemic countries, and 2) stop cVDPV transmission and prevent outbreaks in non-endemic countries. The strategy includes objectives focused on political advocacy, surveillance, vaccination campaigns, community engagement, and integration (Figure 9).

Figure 9. Polio Eradication Strategy 2022–2026 strategic framework
(Source: https://iris.who.int/handle/10665/345967)

Poliovirus has never been simultaneously stopped in Afghanistan and Pakistan. Due to strong social, cultural, and economic ties and extensive cross-border movement, these two countries form a single epidemiological block and must interrupt transmission together to achieve and sustain eradication (WHO, 2021a). Therefore, Goal 1 focuses on interrupting Wild poliovirus type 1 (WPV1) and cVDPV2 transmission in these last two endemic countries. To achieve this, the GPEI aims to

first restrict circulation to core reservoirs and shared transmission corridors, then interrupt all poliovirus within these areas by 2023, with global certification of wild poliovirus eradication targeted for 2026. The strategic objectives and key activities for Goal 1 are shown in Figure 10.

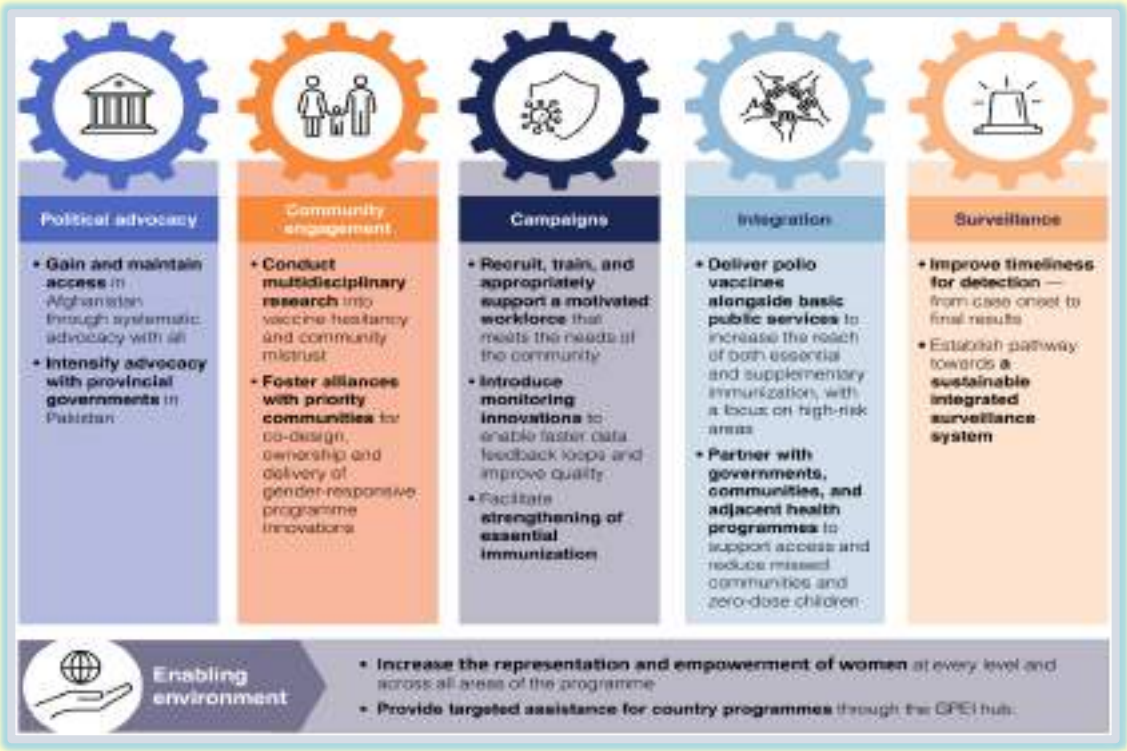


Figure 10. Goal One strategic objectives and key activities
(Source: https://iris.who.int/handle/10665/345967)

Another goal is to stop cVDPV transmission and prevent outbreaks in non-endemic countries (WHO, 2021a). The GPEI aims to interrupt cVDPV2 transmission and validate its absence in all current outbreak countries by 2026. The program will work on an emergency footing to ensure rapid case detection and robust outbreak responses to quickly stop transmission and minimize the risk of new emergencies. Innovative tools, methods, and new partnerships are being leveraged to strengthen outbreak response operations (Figure 11).

Figure 11. Goal Two strategic objectives and key activities
(Source: https://iris.who.int/handle/10665/345967)

In 2024, however, the timeline for certifying the eradication of WPV1 was extended to the end of 2027, while certification of the elimination of cVDPV2 was moved to the end of 2029 (GPEI, 2024). These changes were based on current epidemiology, critical analysis, and expert consultations. This adjustment reflects the programme's progress over the first two and a half years, including ending a type 2 variant outbreak in Ukraine amid war, reaching millions of previously missed children in Afghanistan after nationwide vaccination resumed in late 2021, and quickly containing wild poliovirus importations in Malawi and Mozambique. The original and revised timeline are shown in Figure 12.

Figure 12. Extended Polio Eradication Strategy 2022–2029 revised timeline (Source: https://polioeradication.org/wp-content/uploads/2024/11/GPEI-Strategy-extension-20241113.pdf)

Control Measures in ASEAN Member States

The ASEAN and the WHO, through the South-East Asia Regional Office (SEARO) and the Western Pacific Regional Office (WPRO), recognize the critical role of health and nutrition in sustainable development within the ASEAN Region (ASEAN, 2015). To support these joint efforts, both parties formalized their collaboration through a Memorandum of Understanding (MoU) aimed at improving health outcomes in ASEAN. One key area of cooperation is the prevention and control of communicable diseases, including vaccine-preventable ones, as supported by the Expanded Programme on Immunization (EPI) and poliomyelitis eradication initiative (ASEAN, 2015).

In alignment with this effort, the ASEAN Regional Strategic and Action Plan for Vaccine Security and Self-Reliance (AVSSR) 2021–2025 identifies persistent challenges in vaccine production capacity, highlighting a need for regional collaboration (ASEAN, 2021). To address these challenges, ASEAN can leverage existing global mechanisms that support vaccine production in developing countries. These include initiatives including the Inactivated Polio Vaccine (IPV) project. These platforms provide technical, financial, and policy support aimed at strengthening regional self-sufficiency in vaccine production, which is essential for both routine immunization and pandemic preparedness.

Brunei Darussalam

Brunei Darussalam has implemented a comprehensive EPI since 1957, aimed at protecting children against ten vaccine-preventable diseases, including polio (WHO, 2020b). The programme is continuously updated to align with WHO guidelines and is provided free of charge through 16 government clinics, school health services, and public hospitals. Additional immunization services are available for military personnel through the Royal Brunei Armed Forces (RBAF) medical centres. Remote populations are reached via mobile clinics and the Flying Medical Service. Immunization coverage is monitored through manual reporting from healthcare facilities using the Brunei Health Information Management System (Bru-HIMS), with records maintained for all children under five.

According to the National Immunisation Programme (0–5 Years) Guideline 2017, Brunei administers IPV in a three-dose schedule at 2, 4, and 6 months of age, followed by a booster at 5 years (Ministry of Health Brunei Darussalam, 2019). In line with the Brunei Darussalam Health Strategic Plan 2019–2023, the country supports Sustainable Development Goal (SDG) 3.8, which aims to achieve universal

health coverage, including equitable access to quality healthcare services and essential vaccines. The national target for polio immunization coverage is ≥95%.

Under Section 47, Chapter 1 of the Infectious Diseases Act 2003, parents and guardians are legally required to ensure that their children receive complete immunization against all diseases listed in Schedule 4 of the Act, which includes polio (Ministry of Health Brunei Darussalam, 2022). Notably, Brunei Darussalam achieved polio-free status in the year 2000 and remains committed to sustaining this status through robust immunization and surveillance strategies.

Cambodia

The Cambodian Ministry of Health established the NIP in 1986, which has played a vital role in protecting children, pregnant women, and communities from vaccine-preventable diseases (Ministry of Health Cambodia, 2022). One of its notable achievements is that Cambodia has been free of polio cases since 2000. Although the COVID-19 pandemic initially disrupted routine immunization, the NIP responded with strengthened systems, catch-up campaigns, and outreach efforts to ensure equity in vaccine coverage and build health system resilience.

The Cambodia National Immunization Strategy 2021–2025, with a vision extending to 2030, was developed in alignment with global and regional frameworks (Ministry of Health Cambodia, 2022). The strategy also supports Cambodia's National Health Strategic Plan 2022–2030 and outlines a comprehensive vision for the immunization program, including strategies, interventions, and a robust monitoring and evaluation framework.

Indonesia

Immunization activities in Indonesia began in 1956 and were expanded in 1977 through the establishment of the EPI (Ministry of Health Indonesia, 2017) This initiative aimed to prevent the transmission of vaccine-preventable diseases (VPDs), including poliomyelitis. Polio remains a global public health priority and is subject to international eradication commitments under the Global Polio Eradication Initiative (GPEI), which all countries, including Indonesia, are obligated to support.

Indonesia successfully interrupted transmission of indigenous WPV in 1995 and, along with other countries in the WHO South-East Asia Region, was certified wild polio-free in 2014 (WHO, 2021b). However, since then, the country has experienced outbreaks of cVDPV types 1 and 2. Nonetheless, the Government of Indonesia continues to maintain core functions of the polio programme and remains committed to addressing subnational immunization and surveillance gaps as they arise.

To preserve polio-free status, Indonesia must maintain high immunization coverage, ensure sensitive and timely surveillance, implement robust containment strategies, and retain strong outbreak response capacity (WHO, 2021b). Accordingly, the national polio sustainability plan outlines priority actions to assess current eradication status, identify urgent needs, and establish a multi-faceted strategy to ensure long-term protection against polio resurgence. To support implementation, a monitoring tool has been developed as part of the plan to track progress and follow-up on recommendations. This tool allows the Government of Indonesia to update actions regularly and incorporate additional measures as necessary to ensure the sustainability of critical functions and maintain the country's polio-free status.

Lao People's Democratic Republic

Lao People's Democratic Republic (Lao PDR) launched its National Immunization Program in 1979 under the framework of the EPI, introducing six vaccines, including polio (WHO, 2007). By 1995, national coverage extended to all districts, largely propelled by polio eradication efforts. Acute flaccid paralysis surveillance was initiated in the 1990s as part of the National Polio Eradication Initiative. Lao PDR was officially certified polio-free in 2000; however, surveillance for other VPDs continues to face challenges, particularly in terms of underreporting. The country's Comprehensive Multi-Year Plan (cMYP) outlines programmatic strategies across 12 priority areas, including the objective of maintaining

polio-free status. Specific targets under this strategy include sustaining at least 85% coverage with the third dose of OPV (OPV3) and ensuring AFP surveillance rates exceed one case per 100,000 children under 15 years, in accordance with international standards.

In 2015, the Lao government incorporated the IPV into its national routine immunization schedule for children aged 14 weeks to one year (Lao News Agency, 2015). This decision supports global risk mitigation strategies, particularly against wild poliovirus type 2, while also enhancing immunity against types 1 and 3 and addressing the threat of cVDPV.

To further boost polio immunization coverage, Lao PDR, with support from the WHO, the Australian Government, and Gavi, the Vaccine Alliance, launched an innovative mobile-based reminder initiative (WHO, 2025c). This system sends targeted SMS reminders to parents, encouraging timely vaccinations for polio, measles, and rubella. Managed by the Ministry of Health's NIP and the Center for Health Statistics and Information (CHSI), the reminders utilize data from the Electronic Immunization Register (EIR), a nationwide vaccination database established during the COVID-19 pandemic. This marks the first application of EIR data for personalized outreach, demonstrating a promising step toward improving immunization uptake across the country.

Malaysia

Malaysia supports the Polio Eradication Strategy 2022–2026 and acknowledges the global progress made, especially in reducing wild poliovirus type 1 and circulating vaccine-derived poliovirus, despite the challenges posed by the COVID-19 pandemic. Malaysia emphasizes the need to strengthen polio surveillance and close immunity gaps through public awareness and support from the GPEI partners. With international borders reopening, sustaining high vaccination coverage, particularly in vulnerable and hard-to-reach populations, remains critical. The use and outcomes of the novel oral polio vaccine type 2 should be shared to benefit other countries. Malaysia also notes the implementation of the Strategic Action Plan on Polio Transition (2018–2023), stressing the importance of political commitment and financial sustainability in transitioning polio functions, especially during and after the pandemic. Lastly, sharing lessons learned among countries can help refine national transition plans and align them with evolving health priorities (Ministry of Health Malaysia, 2022).

Myanmar

Until 2018, the Central Epidemiology Unit, Department of Health, Ministry of Health Myanmar conduct a strategy plan for polio eradication named Polio Eradication and Endgame Strategic Plan (2013-2018) (Ministry of Health Myanmar, 2013). The strategic plan has four main objectives, namely 1) poliovirus detection and interruption, 2) routine immunization strengthening and OPV withdrawal, 3) containment and certification, and 4) legacy planning. The goal is to complete the eradication and containment of all wild, vaccine-related, and Sabin polioviruses, such that no child ever again suffers paralytic poliomyelitis.

To meet the established regional goals of polio eradication by 2026 and measles elimination by 2030, Myanmar needs to intensify its surveillance efforts for VPDs, particularly considering performance indicators from 2020 and 2021 (Ministry of Health Myanmar, 2022). In 2022, the Ministry of Health convened a national meeting to review progress and identify strategies to strengthen VPD surveillance and response capacity. Priority should be given to developing context-specific strategies across all states and regions, especially in areas with low routine immunization coverage. These strategies should focus on enhancing disease surveillance, expanding field-based diagnostic testing, and improving rapid response mechanisms for outbreaks including polio. Continued collaboration between the Department of Public Health and the National Health Laboratory remains essential to ensure accurate diagnostic capacity. Furthermore, active participation from both public and private healthcare facilities in reporting cases and hospitalizations is critical to maintaining a responsive and integrated national disease surveillance system.

Philippines

The Philippines has made notable progress in polio eradication and aligns with the global Polio Eradication Strategy 2022–2026. Surveillance systems, including those for acute flaccid paralysis and wastewater monitoring, have been strengthened. The country supports the transition to IPV, aiming for full implementation by 2025, due to concerns over viral shedding from OPV. However, this shift requires significant national investment, highlighting the need for support to low- and middle-income countries to ensure equitable access to IPV. Furthermore, the country advocates for integrated guidance across disease elimination efforts and is considering a multi-disease elimination plan to improve efficiency and health outcomes through a strengthened health systems approach (Republic of the Philippines, 2023).

Singapore

In 2000, Singapore was certified polio-free by the WHO. The last indigenous case of poliomyelitis in the country was reported in 1973 (Government of Singapore, 2025). Under the National Childhood Immunisation Schedule Program, children in Singapore receive the IPV at 2, 4, and 6 months of age, with booster doses administered at 18 months and again at 10 to 11 years. For adults, polio vaccination is recommended for specific at-risk groups, including travellers to regions where polio is endemic or where recent transmission has occurred (in consultation with a travel medicine practitioner), individuals who handle poliovirus isolates, and unvaccinated contacts of individuals who have received the OPV. Adults who were previously vaccinated only require a single booster dose. However, unvaccinated adults should receive a total of three doses: the second dose given 1 to 2 months after the first, and the third dose administered 6 to 12 months after the first. If an accelerated schedule is necessary, all three doses can be given with at least four weeks between each dose (Government of Singapore, 2025).

Thailand

In 2020, the Department of Disease Control of the Thailand Ministry of Health released a Strategic Plan that serves as a framework for implementing measures and coordinating operations for Polio Eradication. The strategic plan has a vision to "maintaining Thailand's Polio-Free Status" with five main strategic plans (Ministry of Health Thailand, 2020):

Strategy 1: Build confidence in the level of immunity against polio.

Strategy 2: Strengthening the quality of the polio surveillance system

Strategy 3: Quarantine and elimination of germs in laboratories according to international standards

Strategy 4: Prepare for emergency response in case of an emergency outbreak of polio

Strategy 5: Management strategies to support the implementation of polio eradication measures

Each of the main strategic plans has its objectives, indicators, and strategies to achieve that in line with its mission: Maintain immunity, identify and confirm pathogens, and prepare for outbreak response.

Viet Nam

Viet Nam has implemented the OPV under its EPI since 1985, initially using domestically produced tOPV, which contains poliovirus types 1, 2, and 3 (Ministry of Health Viet Nam, 2020). From 1993 until May 2016, the country maintained consistently high coverage, with over 90% of children aged 2, 3, and 4 months receiving all three doses of tOPV. In line with global eradication strategies, Vietnam transitioned to bivalent OPV (bOPV, containing types 1 and 3) in June 2016, and subsequently introduced the IPV in September 2018, administered as a single dose at five months. These measures are part of a broader national effort to sustain polio-free status, which has been achieved since 2000 with no recorded cases of wild poliovirus.

According to the approval of the Plan for the Protection of Polio Payment Results for the period 2021-2025, the strategic objectives are twofold, including to maintain this achievement and to ensure rapid and effective response in the event of any poliovirus outbreak (Ministry of Health Viet Nam, 2020). Key actions include strengthening AFP surveillance, providing ongoing training for healthcare workers at all levels, integrating AFP surveillance within broader vaccine-preventable disease monitoring, maintaining high community immunity, and enhancing public communication. In addition, Viet Nam continues to certify facilities handling type 2 poliovirus, supports poliovirus-related research, strengthens the capacity of poliovirus laboratories, sustains the operations of the National Polio Certification Committee, and regularly updates the national polio immunization schedule under the expanded immunization program. These coordinated actions reflect Viet Nam's commitment to sustaining eradication gains and mitigating the risk of reintroduction or emergence of vaccine-derived poliovirus.

References

Ashique, S., Srivastava, S., Sridhar, S. B., & et al. (2025). *Outbreak of circulating vaccine-derived poliovirus type 2 (cVDPV2) in Indonesia in 2023–2024*. Egyptian Journal of Internal Medicine, 37, Article 38. https://doi.org/10.1186/s43162-025-00421-0.

ASEAN (2015) *Memorandum of understanding between the Association of Southeast Asian Nations and the World Health Organization*. Available at: https://arc-agreement.asean.org/file/doc/2015/01/memorandum-of-understanding-between-asean-and-the-who.pdf (Accessed: 12 July 2025).

ASEAN (2021) *Regional Strategic and Action Plan for ASEAN Vaccine Security and Self-Reliance (AVSSR) 2021-2025*. Available at: https://asean.org/wp-content/uploads/2021/10/AHMM-ADOPTED_AVSSR-Strategic-and-Action-Plans-2021-2025-cleaned-version_FINAL.pdf (Accessed: 12 July 2025).

Government of Singapore (2025) *Poliomyelitis: Poliovirus types 1, 2 and 3*. Available at: https://www.cda.gov.sg/professionals/diseases/poliomyelitis#d8af0ac60cd7ec180840270e82ef9418 (Accessed: 15 July 2025).

GPEI (2016). *Classification and reporting of vaccine-derived polioviruses (VDPV): GPEI guidelines*. Available at: https://polioeradication.org/wp-content/uploads/2016/09/Reporting-and-Classification-of-VDPVs_Aug2016_EN.pdf (Accessed: 17 July 2025).

GPEI (2024) *Polio eradication strategy 2022-2026: delivering on a promise, extension to 2029*. Available at: https://polioeradication.org/wp-content/uploads/2024/11/GPEI-Strategy-extension-20241113.pdf (Accessed: 17 July 2025).

GPEI (n.d.) *Wild Poliovirus*. Available at: https://polioeradication.org/wild-poliovirus/#:~:text=Wild%20polioviruses%20are%20the%20naturally,prior%20to%20the%2020th%20century. (Accessed: 17 July 2025).

GPEI (n.d.) *Where We Work*. Available at: https://polioeradication.org/about-polio/where-we-work/. (Accessed: 17 July 2025).

Lao News Agency (2015) *National immunisation for polio launched*. Available at: https://kpl.gov.la/en/detail.aspx?id=7342 (Accessed: 20 July 2025).

Ministry of Health Brunei Darussalam (2019) *Strategic Plan 2019-2023: Investing for Our Future*. Available at: https://moh.gov.bn/wp-content/uploads/2024/10/FINAL-MOH-Strategic-Book-2019-compressed-5MB-1.pdf (Accessed: 20 July 2025).

Ministry of Health Brunei Darussalam (2022) *Perutusan Yang Berhormat Dato Seri Setia Dr Haji Mohammad Isham bin Haji Jaafar, Menteri Kesihatan, sempena Minggu Imunisasi Sedunia*. Available at: https://moh.gov.bn/wp-content/uploads/2025/01/FINAL-Perutusan-YB-Menteri-Kesihatan-Minggu-Imunisasi-Sedunia-2022.pdf (Accessed: 20 July 2025).

Ministry of Health Cambodia (2022) *Cambodia National Immunization Strategy 2021-2025 and beyond up to 2030*. Available at: https://nmchc.gov.kh/en/cambodia-national-immunization-strategy-2021-2025-and-beyond-up-to-2030/ (Accessed: 21 July 2025).

Ministry of Health Indonesia (2017) *Peraturan Menteri Kesehatan Nomor 12 Tahun 2017 tentang Penyelenggaraan Imunisasi*. Available at: https://peraturan.bpk.go.id/Details/111977/permenkes-no-12-tahun-2017 (Accessed: 19 July 2025).

Ministry of Health Malaysia (2022) *Statement by Malaysia 15TH Session of The WHO's Executive Board*. Available at: https://apps.who.int/gb/statements/eb150/PDF/Malaysia_16.1-16.2.pdf (Accessed: 19 July 2025).

Ministry of Health Myanmar (2013) *Polio Eradication and AFP Surveillance Guideline For Medical Officer*. Available at: https://www.mohs.gov.mm/ckfinder/connector?command=Proxy&lang=en&type=Main&currentFolder=/Publications/CEU/&hash=a6a1c319429b7abc0a8e21dc137ab33930842cf5&fileName=2.+AFP+Surveillance+guideline_English.pdf (Accessed: 21 July 2025).

Ministry of Health Myanmar (2022) *မြန်မာနိုင်ငံအနေဖြင့် ၂၀၂၆ ခုနှစ်၌ ကမ္ဘာပေါ်တွင် ပိုလီယိုရောဂါ လုံးဝကင်းစင်ပပျောက်ရေးနှင့် ၂၀၃၀ ပြည့်နှစ်တွင် ဝက်သက်ရောဂါ ပပျောက်ရေးရည်မှန်းချက်များ အောင်မြင်ရေး ဆောင်ရွက်မည်*. Available at: https://www.moi.gov.mm/index.php/news/28106 (Accessed: 21 July 2025).

Ministry of Health Thailand (2020) *แผนยุทธศาสตร์การกวาดล้างโรคโปลิโอ ของประเทศไทย ปี 2020-2023: (Strategic plan for polio eradication, Thailand, 2020-2023)*. Available at: https://ddc.moph.go.th/uploads/publish/1157720210624085652.pdf (Accessed: 20 July 2025).

Ministry of Health Viet Nam. (2020). *Quyết định 5715/QĐ-BYT Kế hoạch bảo vệ thành quả thanh toán bệnh bại liệt 2021-2025*. Available at: https://luatvietnam.vn/y-te/quyet-dinh-5715-qd-byt-bao-ve-thanh-qua-thanh-toan-benh-bai-liet-2021-2025-196901-d1.html (Accessed: 21 July 2025).

Republic of the Philippines (2023). *76th World Health Assembly: Poliomyelitis eradication Polio transition planning and polio post-certification.* Available at: https://apps.who.int/gb/statements/WHA76/PDF/Philippines-15.4.pdf (Accessed: 21 July 2025).

WHO (2004) *Polio laboratory manual: 4th edition*. Available at: https://iris.who.int/bitstream/handle/10665/68762/WHO_IVB_04.10.pdf (Accessed: 15 July 2025).

WHO (2007) *Comprehensive Multi-Year Plan: 2007-2011 National Immunization Program Lao People's Democratic Republic*. Available at: https://extranet.who.int/countryplanningcycles/sites/default/files/planning_cycle_repository/lao_peoples_democratic_republic/lao_cmyp_2007-2011.pdf (Accessed: 20 July 2025).

WHO (2019) *Two out of three wild poliovirus strains eradicated: Global eradication of wild poliovirus type 3 declared on World Polio Day*. Available at: https://www.who.int/news-room/feature-stories/detail/two-out-of-three-wild-poliovirus-strains-eradicated. (Accessed: 13 July 2025).

WHO (2020a) *Considerations for the introduction of a second dose of Inactivated polio vaccine (IPV2) in routine immunization programmes from 2021*. Available at: https://www.paho.org/sites/default/files/faqs_ipv2_eng_10_june_2020.pdf. (Accessed: 15 July 2025).

WHO (2020b) *Joint external evaluation of IHR core capacities of Brunei Darussalam: mission report, 28 October-1 November 2019*. Available at: https://iris.who.int/handle/10665/332937. (Accessed: 19 July 2025).

WHO (2021a) *Polio eradication strategy 2022–2026: delivering on a promise*. Available at: https://iris.who.int/handle/10665/345967. (Accessed: 14 July 2025).

WHO (2021b) *Polio transition in a snapshot: Indonesia*. Available at: https://cdn.who.int/media/docs/default-source/polio-transition/who-polio-transition-snapshot-indonesia.pdf?sfvrsn=8d4910d8_1&download=true. (Accessed: 19 July 2025).

WHO (2024) *Global guidance for conducting acute flaccid paralysis (AFP) surveillance in the context of poliovirus eradication.* Available at: https://iris.who.int/bitstream/handle/10665/376603/9789240089662-eng.pdf. (Accessed: 15 July 2025).

WHO (2025a) *Poliomyelitis*. Available at: https://www.who.int/news-room/fact-sheets/detail/poliomyelitis. (Accessed: 12 July 2025).

WHO (2025b) *Poliomyelitis vaccination coverage*. Available at: https://immunizationdata.who.int/global/wiise-detail-page/poliomyelitis-vaccination-coverage. (Accessed: 15 July 2025).

WHO (2025c) *Lao PDR Ministry of Health pilots text message vaccine reminders for childhood immunizations*. Available at: https://www.who.int/laos/news/detail/30-01-2025-lao-pdr-ministry-of-health-pilots-text-message-vaccine-reminders-for-childhood-immunizations. (Accessed: 20 July 2025).

WHO (n.d.) *History of polio vaccination*. Available at: https://www.who.int/news-room/spotlight/history-of-vaccination/history-of-polio-vaccination. (Accessed: 16 July 2025).

WHO (n.d.) *Immunization, Vaccines and Biologicals*. Available at: https://www.who.int/teams/immunization-vaccines-and-biologicals/diseases/poliomyelitis-(polio). (Accessed: 16 July 2025).

ASEAN BIOLOGICAL THREATS SURVEILLANCE CENTRE

Report generated by
ASEAN Biological Threats Surveillance Centre
Email: support.aseanbiosurveillance.org
Email: data.aseanbiosurveillance.org
Facebook: abvsc.official
Instagram: abvsc.official