Notification Timeline:

From Lab/Practitioner to Public Health: Immediate
From Public Health to Ministry of Health: Immediate[1]
From Ministry of Health to PHAC: within 24 hours[2]

When reporting, include case classification (Table 1) or details of person under investigation with a higher suspicion of poliomyelitis while awaiting lab confirmation.

Consider issuing a **Canadian Network for Public Health Intelligence (CNPHI) Public Health Alert** to facilitate timely information sharing between local, Provincial/Territorial (PT), and national stakeholders. Public Health Agency of Canada (PHAC)/ National Microbiology Laboratory (NML) can assist in issuing alerts if needed.

Public Health Follow-up Timeline: Immediate

Public Health Purpose for Notification of Poliomyelitis

- Rapid and early detection of poliovirus and subsequent investigation supports:
  - identifying possible sources of transmission
  - the timely implementation of public health measures to limit the spread of polioviruses and maintain the elimination status achieved by Canada in 1994.
- International reporting by Canada to facilitate knowledge sharing and international public health cooperation.

[1] Submit Outbreak Notification and Summary Report form to Population Health Branch via cdc@health.gov.sk.ca. Public health should also notify SHA Health Emergency Management (HEM) to notify Ministry of Health's Health Emergency Management Unit (HEMU) if situation meets PHAC definition of polio event or outbreak (See polio event/outbreak definitions).

[2] Polio is a nationally notifiable disease in Canada. Ministry of Health must notify the Public Health Agency of Canada (PHAC) of laboratory-confirmed polio events or outbreaks within 24 hours. Notifications should be sent to vpd-mev@phac-aspc.gc.ca and hpoc-cops@phac-aspc.gc.ca.

Surveillance Case Definition

Table 1. Case classifications for confirmed paralytic poliomyelitis and nonparalytic poliovirus infection.

Confirmed Paralytic poliomyelitis **(Public Health Agency of Canada [PHAC], 2024)**	Clinical features* compatible with paralytic poliomyelitis with laboratory confirmation** of wild-type, vaccine-derived or Sabin/Sabin-like poliovirus detected in a clinical specimen **OR** Clinical features* compatible with paralytic poliomyelitis in a person who is epidemiologically linked*** to a laboratory-confirmed case
Confirmed Nonparalytic poliovirus infection **(PHAC, 2024)**	Any person without symptoms of paralytic poliomyelitis with laboratory confirmation** of wild-type, vaccine-derived or Sabin/Sabin-like poliovirus detected in a clinical specimen **AND** Has not been vaccinated with OPV within 6 weeks prior to specimen collection date
Probable case[4] **(adapted from Alberta Health, 2023)**	Clinical features* without detection of polio virus from an appropriate clinical specimen **AND** without evidence of infection with other neurotropic viruses **AND** the absence of recent immunization with polio virus-containing vaccine **AND** with one of the following laboratory confirmations of infection: • Significant rise (such as fourfold or greater) in polio IgG titre by any standard serologic assay between acute and convalescent sera**** **OR** • Positive serologic test for polio IgM antibody ****
Suspected case[4] **(adapted from Alberta Health, 2023)**	A person who is determined to be highly suspicious for polio by Public Health **AND** poliovirus testing has not yet been initiated or is pending. **AND** Has non-specific symptoms that may be consistent with polio (i.e. fever, sore throat, headache, abdominal pain, nausea, vomiting, and/or loss of appetite, aching muscles, stiff neck or back, weakness or inability to move muscles such as in the arms, legs or face) **AND** • has a history of residence or travel 6 weeks before symptom onset, to an area where poliovirus is circulating or where there is a poliovirus outbreak **OR** • has an epidemiological link to a laboratory-confirmed case.
*** Clinical features** The presence of one or more of these clinical features may suggest paralytic poliomyelitis: • acute flaccid paralysis of one or more limbs • decreased or absent deep tendon reflexes in the affected limb(s) • weakness of facial, oropharyngeal or respiratory muscles •	

AND

- no sensory or cognitive loss accompanies the paralysis

AND

- no other apparent cause (including laboratory investigation to rule out other causes of a similar syndrome) or neurologic deficit present 60 days after onset of initial symptoms, unless the patient has died.

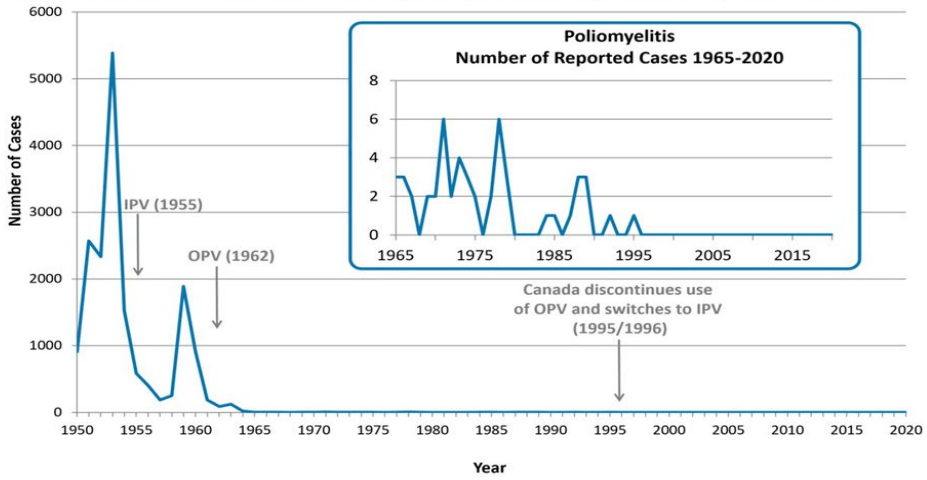
** Refer to Attachment—Laboratory Protocol for details on laboratory confirmation and protocol.

***__Direct Contact:__ Infected individuals had close contact or shared the same environment.; __Common Exposure:__ Cases were exposed to the same infection source.; __Transmission Chain:__ One infection led to another through a traceable link.

****Poliovirus serology is no longer recommended by NML. Serological testing may be referred out by the NML to the U.S. Centers for Disease Control and Prevention, where applicable, such as in the scenario when a stool sample cannot be obtained from a paralytic case and if the case has had no exposure to OPV and no history of vaccination.

Epidemiology and Occurrence

Figure 1: Number of reported cases of poliomyelitis, paralytic, Canada, 1950 to 2020



Source: https://www.canada.ca/en/public-health/services/diseases/poliomyelitis-polio/health-professionals.html#a8

Canada has been polio-free since 1979 and was certified polio-free by the WHO in 1994. No wild poliovirus cases have been detected since 1996. However, imported cases of poliovirus, including Sabin-like strains and one likely case of vaccine-associated paralytic polio (VAPP), have been reported due to the use of oral polio vaccine (OPV) in other countries. While the risk of polio in Canada is minimal due to strong biosecurity, sanitation, and high inactivated polio vaccine (IPV) coverage, some communities in Canada still have low immunization rates, posing a potential risk until global polio eradication is achieved (PHAC, 2023).

Additional Background Information

Causative Agent

Poliovirus (RNA virus, Picornaviridae family, enterovirus subgroup).

Wild polioviruses are the naturally occurring strains of poliovirus that circulate in the environment. There are three serotypes of wild poliovirus (WPV) —type 1, type 2, and type 3.

- Due to the efforts of the Global Polio Eradication Initiative (GPEI), WPV type 2 and 3 have been eradicated from global circulation since 2015 and 2019 respectively[2].
- As of September 2024, WPV type 1 remains endemic in Pakistan and Afghanistan.

There are 2 types of polio vaccines:

- inactivated polio vaccine (IPV)
- oral polio vaccine (OPV) or Sabin vaccine

OPV can cause illness identical to polio in 2 ways:

1. OPV consists of live, weakened poliovirus that rarely can cause paralysis in the vaccine recipient or their close contacts (referred to as vaccine-associated paralytic polio or **VAPP**). The risk of VAPP is estimated at one in 750,000 with the first dose of OPV and one in 2.4 million for all doses of OPV.
2. If the strain of poliovirus in the OPV circulates in populations with low vaccine coverage, or replicates in an immunocompromised host, it can undergo mutations and revert to a form that causes paralytic disease indistinguishable from wild polio. This is called vaccine-derived poliovirus (**VDPV**).
    - If VDPV circulates in the community resulting in several detections, it's referred to as circulating vaccine-derived poliovirus (**cVDPV**).

Genetic sequencing can be used to distinguish the OPV vaccine strains from VDPV.

Canada stopped using OPV and began using IPV exclusively as of 1996.

Symptoms

Polio (poliomyelitis) is a highly infectious viral disease that can infect the central nervous system and damage the nerve cells that activate muscles.

In approximately 75% of infected people, polio doesn't cause any symptoms and can go unrecognized.

In about 25% of cases, symptoms can include:

- fever
- sore throat
- headache

- feeling unwell
- gastrointestinal symptoms, such as:
    - abdominal pain
    - nausea
    - vomiting

These non-specific symptoms can develop 3 to 6 days after exposure to the virus.
Meningitis can also occur in approximately 1% of cases.

In less than 1% of cases, paralysis can occur.
Paralysis can be partial or full and is generally asymmetric. It tends to affect the legs more often than the arms and may affect the respiratory muscles. There may also be bulbar involvement affecting the cranial nerves. The time from exposure to onset of paralysis is approximately 7 to 21 days. Paralysis is often permanent, and weakness or paralysis still present 60 days after onset is likely to persist.

Post-polio syndrome (PPS)
Approximately 25 to 40% of adults who contracted paralytic polio during childhood may develop a non-infectious post-polio syndrome 15 to 40 years after initial infection.

Symptoms of post-polio syndrome can include:

- slowly progressive muscle weakness
- loss of muscle function
- muscle atrophy
- pain and fatigue
- Muscle weakness can result in breathing and swallowing difficulties.

Reservoir
Humans are the only known reservoir of poliovirus.

Incubation Period
The incubation period is 3–6 days for non-specific symptom onset. In those that progress to paralysis, this occurs in 7 to 21 days from exposure (can range up to 35 days).

Period of Communicability
Poliovirus can be identified from throat secretions as early as 36 hours after exposure and from stool as early as 72 hours after exposure. The virus persists in the throat for approximately 1 week and in the stool for 3 to 6 weeks. Cases are most infectious in the days before and after onset of first symptoms (which could be non-specific symptoms).

Poliovirus communicability begins shortly after virus acquisition including receipt of OPV. For paralytic polio, it can start up to **5 weeks (35 days)** before paralysis onset, while for nonparalytic cases with virus detected in stool, it can start up to **6 weeks before detection**. To simplify, **a 6-week period** will be used as the maximum incubation and communicability timeframe for confirmed cases. Specific case details, like travel history, may be used to adjust these periods.

Mode of Transmission

Wild-type poliovirus is primarily transmitted via the **fecal-oral route** and through **oral secretions**. Less common transmission occurs through contaminated fomites, food, or water. After infection, the virus is excreted in **throat secretions for 1–2 weeks** and in **feces for 3–6 weeks**, even in asymptomatic individuals.

Oral polio vaccine (OPV) can result in virus shedding in the throat (1–2 weeks) and feces (several weeks), allowing fecal-oral transmission. Inactivated polio vaccine (IPV), administered by injection, does not induce gut immunity, so IPV-vaccinated individuals exposed to poliovirus can still shed and transmit the virus through feces.

Risk Factors

Polio primarily affects children under 5, but anyone unvaccinated or under-vaccinated can become infected. In Canada, higher-risk groups include:

- **Travelers to/from areas with circulating poliovirus** and their contacts.
- **Communities or groups**, such as refugees, who have received OPV within past 35 days or from an area affected by circulating poliovirus.
- **Healthcare workers** in close contact with patients excreting wild-type or vaccine-derived poliovirus.
- Individuals in close contact with **polio-excreting individuals**, such as military personnel, humanitarian workers, and those working with refugees.
- **Laboratory workers** handling poliovirus-containing specimens.
- **Family/close contacts** of internationally adopted infants vaccinated with OPV.

Treatment/Supportive Therapy

There is no specific medication for polio and care is supportive in nature.

Other investigational options may be available to rule out differential diagnoses. Clinical case management focuses on supportive care to address symptoms and complications, such as paralysis.

MHO consultation with an infectious disease specialist and neurologist is recommended, along with early rehabilitation therapy.

The disease can be prevented through vaccination.

Public Health Investigation

Investigation of a case

PHAC recommends using the Pan American Health Organization (PAHO) polio case investigation form (Attachment—PAHO Polio Investigation Form) as a guide to inform public health investigations.

Assessment of a case

- Confirm if the individual meets the case definitions (Table 1).
- Collect a detailed history of the illness, including the onset date of symptoms, and determine the incubation and communicability periods.
- Assess any neurological abnormalities or underlying medical conditions (e.g., immunosuppression).
- Investigate the possible source of infection, including:
  - History of travel to/from or residing in another country where there is a risk of poliovirus or OPV exposure within 6 weeks prior to onset of paralysis or collection of positive stool sample (for those without paralytic polio); Details of travel history, including travel dates and locations.
  - Living conditions in areas with poor sanitation, such as inadequate water treatment or sewage disposal.
  - Close contact with confirmed or probable polio cases, individuals showing paralysis symptoms, or those under investigation for polio.
  - Contact with symptomatic individuals (e.g., travel companions) who, within six weeks, were in areas with poliovirus circulation, outbreaks, or OPV campaigns.
- Review the individual's polio immunization history, including:
  - Number and dates of doses received.
  - Type of polio immunization received - OPV/IPV
  - Location of vaccination (e.g., out of province or country).
  - Reasons for being unvaccinated if applicable.
- For suspected vaccine-associated disease, assess:
  - OPV receipt within six weeks before symptom onset.
  - Recent travel or residence in areas with ongoing OPV campaigns.
  - Contact with household members or others vaccinated with OPV within six weeks before the illness.
- Determine the individual's occupation, particularly if it involves sensitive situations or high-risk transmission roles (refer to Table 2).
- Identify potential transmission settings (e.g., childcare facilities, homeless shelters, overcrowded housing, refugee camps) during the communicability period.

- Whether a member of a group/community that is known to be unvaccinated or under-vaccinated
- Identify **close contacts** and evaluate their risk of exposure during the infectious period, defined as six weeks before symptom onset or a positive laboratory result for asymptomatic cases.

Table 2. High-risk Situations or Occupations

Food handler	• Handles unwrapped food intended for consumption and/or • Uses equipment or utensils that come into contact with unwrapped food intended for consumption. *
Healthcare, childcare or other staff	• Serves food to individuals who may be vulnerable or susceptible. • Provides direct care to patients, including young children, the elderly, or dependent individuals.
Child attending a childcare facility or similar facilities	• Is diapered or is unable to maintain good personal hygiene standards.
Any individual (older child or adult)	• Has challenges (e.g., disabilities) that affect the ability to practice proper hand hygiene and participates in activities that may facilitate disease transmission. • May interact with individuals outside the household who are immunocompromised, unimmunized, or partially immunized (G).

***Note:** Food handlers who do not directly touch food, equipment, or utensils in a manner that could facilitate transmission are generally not considered a risk. However, each case should be assessed individually based on specific circumstances.

Management of a case

General Recommendations

1. Notification and Investigation:
    - Investigate cases to identify the infection source and prevent transmission.
2. Infection Prevention and Control (IPC):
    - Follow IPAC measures as per SHA guidelines.

Table 3 applies to **confirmed and probable polio cases**, with some recommendations also relevant for suspected cases while awaiting lab results, especially if suspicion is high (Refer to Section 8.1.1 within PHAC Guidance for the response and management of a polio virus event or outbreak in Canada).

Certain measures (*marked with an asterisk*) should continue until the individual is no longer infectious. A case is considered non-infectious after **three consecutive negative stool samples**, collected at least 24 hours apart, and tested by the NML (see Attachment—Laboratory Protocol for details).

In immunocompetent individuals, poliovirus is typically cleared from the stool within **3 to 6 weeks**. For those who do not clear the infection within this timeframe, such as individuals with primary immunodeficiency, public health management and further stool testing will be guided on a **case-by-case basis** in consultation with public health and infectious disease specialists.

Table 3: Overview of possible polio (with or without paralysis) case management

Factor	Recommendations and considerations
Isolation and infection prevention and control in health care facilities*	• Follow SHA IPAC and OH&S guidelines.
Isolation and infection prevention and control at home*	• Limit household transmission by reducing close contact and ensuring the case sleeps in a separate room if possible. • The case should use a separate bathroom if available; otherwise, clean and disinfect the shared bathroom after each bowel movement using household bleach or 0.5% accelerated hydrogen peroxide. Clean all bathrooms daily with the same disinfectants. • Emphasize proper hand hygiene for all household members, especially after bathroom use, diaper changes, cleaning bathrooms, and before handling food. • Avoid sharing personal items such as towels, bed linens, eating utensils, dishes, or glasses. • Restrict contact with immunocompromised or unimmunized household members (including infants or children too young for full immunization). If unavoidable, the case must practice proper hand hygiene before contact. • Handle secretions, feces, and contaminated articles using routine practices. In areas where there is modern sewage disposal, feces and urine can be discharged directly into the sewers. Collect and incinerate waste if sanitary sewage is not connected to a municipal wastewater management system.
Stool testing*	• Collect stool samples weekly until the first negative result, then collect daily (at least 24 hours apart) until the individual is no longer considered infectious. * • For individuals with persistent positive stool samples, the frequency of testing will be determined by the MHO*. • Ensure proper environmental cleaning and hand hygiene after collecting stool samples.

Exclusions*	• The case should isolate at home until no longer infectious, though they may go outside if they avoid using public bathrooms and close contact with others.
	• For cases not clearing the infection after six weeks, special allowances will be determined on a case-by-case basis by MHO.
	• While infectious, the case should avoid:
	  ○ Attending or working in group childcare settings.
	  ○ Preparing food for others outside the household (e.g., food handling jobs).
	  ○ Working as a healthcare provider.
	  ○ Contact with non-household members who are immunocompromised or unimmunized, including infants and young children without a complete immunization series.

Visitors*	• Restrict visitors (to the case's house or health care facility) to only those who are essential. • Essential visitors should avoid using the bathrooms used by the case and should not be served food or drinks. They should minimize close contact with the case and other household members. • Those unable to maintain proper hand hygiene, immunocompromised visitors, and those unimmunized (including infants and children too young for full immunization) should not visit the case.
Monitoring	• Public health should maintain regular communication with the case to ensure compliance with recommendations and address any arising issues. Frequency to be determined on a case-by-case basis based on client situation (i.e., occupation, contact with susceptible populations, etc.) and likelihood of compliance. • A follow-up assessment of paralysis outcomes should be conducted 60 days after onset, if applicable in consultation with the neurologist for public health surveillance.
Vaccination	• Once confirmed to be free of poliovirus through three consecutive negative stool samples, cases should be offered polio vaccination (IPV) and any other outstanding vaccinations, as per the Saskatchewan Immunization Manual, if needed. Polio infection can provide lifelong immunity, but this immunity is specific to the particular poliovirus serotype that caused the infection (types 1, 2, or 3). It does not protect against the other serotypes. Vaccination, which provides immunity to all three serotypes, is crucial for comprehensive protection against poliovirus even after the infection.

* These precautions should be in place until three consecutive negative samples are collected, each at least 24 hours apart. All stool sample testing must be conducted by the NML (see Attachment—Laboratory Protocol for details).

Assessment and Management of contacts

Assessment

Identify and assess potential contacts based on exposure.

To support contact management, collect the following information:

- **Contact Information**: Phone, email, text, and address.
- **Workplace/School Details**: Occupation, school, or childcare center attendance.

Table 4: Potential contacts of a case infected with poliovirus and the possible acquisition and/or transmission risk

High-Risk Close Contacts	• Household members and anyone who stayed overnight in the same household. • Sexual partners of the case. • Group living contacts who shared a bathroom or had close interactions (e.g., in dormitories, shelters, detention centers, group homes, or settlement houses). • Childcare contacts, including children attending the same facility and childcare workers.

	• Healthcare workers (HCWs) and laboratory staff who had contact with the case's feces or respiratory secretions without proper PPE or infection prevention and control (IPC) measures, including instances of PPE breaches.
Low-Risk Close Contact	• Individuals who consumed food prepared by the case, individuals who share bathrooms/toilet outside of the household /communal living e.g. workplace
Not a Contact	• HCW or laboratory worker is determined to have used adequate personal protective equipment and adhere to infection prevention and control practices

The transmission risk for a contact is dependent on the timing and nature of the exposure with the case and is not influenced by the contact's vaccination status since those vaccinated with IPV can still become infected and spread infection to others.

Table 5: Higher risk contact management recommendations and considerations for poliovirus

Factor	Recommendations/considerations
Infection prevention at home*	1. **Contacts in the Same Household**: - Avoid sharing personal items (e.g., towels, unwashed utensils, dishes, drinking glasses). - Clean and disinfect bathrooms daily using household bleach or 0.5% accelerated hydrogen peroxide. - Practice proper hand hygiene, especially after using the bathroom, changing diapers, cleaning the bathroom, and before handling food. Public health should emphasize hand hygiene for all household members. 2. **Contacts in a Separate Household**: - Minimize contact with others in their household; use a separate bedroom if possible. - Use a separate bathroom if available and disinfect it daily or after use, especially following bowel movements. - Avoid contact with immunocompromised or unvaccinated household members unless necessary and ensure proper hand hygiene before any interaction.
Stool testing*	• Collect the initial stool sample no earlier than four days after the contact's last exposure to the case before infection prevention and control measures were implemented. • Collect the second stool sample at least 48 hours after the first*. • Ensure proper environmental cleaning and hand hygiene following the collection of stool samples.
Food preparation*	• The contact should not work as a food handler. • They should also avoid preparing food for individuals who have not been identified as close contacts of the case. • Proper hand hygiene must be practiced before any food preparation.
Exclusions*	• The contact should avoid using bathrooms outside the home or having close contact with individuals outside the household.

	• Consequently, they should not attend childcare, school, work outside the home, or other indoor public settings.
Visitors*	• Restrict visitors to the contact's home to essential individuals only. • Essential visitors should avoid using the contact's bathroom; if necessary, they must practice proper hand hygiene afterward, avoid shared towels, and should not be served food or drinks. Close contact with the contact and household members should be minimized. • Visitors who are unable to maintain proper hand hygiene, immunocompromised, or not fully immunized against polio (including infants and young children) should not visit the contact's home.
Monitoring	• Contacts should monitor for symptoms of poliovirus infection and report any to public health immediately. • Public health officials should regularly follow up with contacts to ensure compliance, address issues, and check for symptoms. • Symptomatic contacts should see a healthcare provider informed about their poliovirus exposure and vaccination status. Providers should be vaccinated against polio, not immunocompromised, and may need an adult IPV booster if not received at or after age 18.
Vaccination	• Once confirmed not infected with poliovirus, contacts should receive polio vaccination (IPV) and any other required vaccines according to the Saskatchewan Immunization Manual. • Adult contacts who haven't had an IPV booster at or after age 18 should be offered a lifetime IPV booster. • Household members of contacts should also be offered polio vaccination (IPV) and any other necessary vaccinations, with consideration for an IPV booster for adults aged 18 or older who haven't received one. • Vaccination is meant to protect against future exposure, not as post-exposure prevention for contacts.

* These precautions should be in place until two consecutive negative stools taken at least 48 hours apart, with the first at least 4 days after the contact's last exposure to the case before infection prevention and control measures were initiated. Note that this is a different procedure for stool sample testing compared to the process outlined in Table 4 for a polio case. All stool sample testing must be conducted by the NML (see Attachment—Laboratory Protocol for details).

Table 6: Lower risk contact management recommendations and considerations for poliovirus

Factor	Recommendations/considerations
Infection prevention and control	• Emphasize the importance of proper hand hygiene for the contact and all household members, including after using the bathroom, changing diapers, cleaning the bathroom, and before preparing, serving, or eating food.
Stool testing	• Stool testing is typically not recommended for this group of contacts. However, it may be considered for contacts who could be a potential source of acquisition for the case, by collecting two stool samples as soon as possible, 24 hours apart. • Proper environmental cleaning and hand hygiene must be followed after collecting stool samples.

Monitoring	• Contacts should be alert for any symptoms that could indicate poliovirus infection and should know how to promptly reach public health officials if these symptoms arise. If symptoms develop, contacts should seek medical attention. The healthcare provider should be informed of the contact's poliovirus exposure history and the necessary precautions. The provider should be fully vaccinated against poliovirus and not immunocompromised.
Vaccination	• Once confirmed not infected with poliovirus, contacts should be offered polio vaccination (IPV) and any other required vaccinations according to the Canadian Immunization Guide, as needed. • A single lifetime adult booster dose of IPV-containing vaccine should be considered for adult healthcare providers, laboratory workers, or other contacts who have not received one after the age of 18.

Outbreak and Epidemic Measures

a. Investigation of a facility-related event involving poliovirus

The Polio Essential Facility (PEF) conducts investigations into facility-related poliovirus incidents, while Canada's National Authority of Containment (NAC) for Poliovirus provides containment guidance and oversees the root cause analysis of such events.

Contact tracing recommendations outlined in Assessment and management of contacts and other public health follow-up may still apply. Therefore, local/regional and PT health authorities should be informed.

b. Public Health Response to a Polio Event or Outbreak in Canada

Key activities are outlined in PHAC guidelines: guidance-response-management-poliovirus-event-outbreak-canada.pdf

Table 7: Definition of Poliovirus Event or Outbreak

A poliovirus event is defined as:	***Detection in a person:***
	• Detection of confirmed paralytic poliomyelitis (wild-type or VDPV/cVDPV) in a person with a travel history to an area with poliovirus circulating within 35 days before onset of paralysis, and no evidence of local community transmission in Canada: **or**
	• Detection of laboratory-confirmed nonparalytic poliovirus infection with a travel history to an area with poliovirus circulating within 6 weeks before poliovirus detection in the person, and no evidence of local community transmission in Canada; **or**
	• Vaccine-associated paralytic poliomyelitis (VAPP):
	  ○ VAPP in a recipient of OPV who received the OPV in the 7 to 35 days before onset of paralysis: **or**
	  ○ VAPP in a close contact of a recipient of OPV, where the exposure in the close contact occurred within the communicable period of the OPV recipient (within up to 6 weeks after receipt of OPV).

A poliovirus outbreak is defined as:	• Detection of confirmed poliovirus infection (paralytic or nonparalytic) in a person (unless defined as a "poliovirus event" above); **or** • Any newly detected cVDPV, whether in a person or environmental sample; that is, when a VDPV isolated either in human stool or the environment can immediately be genetically linked to another VDPV in the community, thereby confirming circulation in the areas of detection.

Enhanced case surveillance

Enhanced case surveillance aims to improve case detection and reporting quality, especially following detection of WPV/VDPV cases or environmental samples in Canada.
Key actions include:

- Strengthening communication with health professionals to emphasize:
  - Identifying cases with acute flaccid paralysis (AFP) at any age.
  - Monitoring for non-specific symptoms in individuals exposed to poliovirus.
  - Collecting stool samples within 14 days of symptom onset for all AFP cases or suspected poliovirus cases and sending them for laboratory analysis.
  - Promptly reporting AFP cases with suspected or confirmed poliovirus to local public health authorities.
- Including adolescents and adults in AFP reporting, with the geographic scope determined by initial case investigations.

Expanded environmental wastewater sampling

In response to WPV/VDPV cases or environmental detections in Canada—or international detections posing importation risks—expanded strategic wastewater sampling may be warranted to complement AFP surveillance. This includes increasing the number of sites sampled or sampling frequency. However, poliovirus wastewater testing differs from testing for other pathogens, such as COVID-19, and requires strict laboratory safety protocols. Decisions to implement or expand sampling are jointly made by local, provincial/territorial, and federal stakeholders, with all samples sent to the NML for testing.

If a case is detected, sampling in the case's residential area and epidemiologically linked catchments can help define the geographic scope, community transmission, and circulation duration. High-risk areas for sampling are identified based on:

- Immunity gaps, such as unvaccinated or under-vaccinated groups or age cohorts.
- Links to regions with circulating polioviruses.
- Mobile populations (e.g., migrants, refugees, nomads, or workers in informal settlements).
- Routine vaccination coverage below 90%.

Sampling is recommended every two weeks, with a minimum frequency of once a month. Sampling ends after six months with no WPV/VDPV detections.

Investigation of a detection from environmental wastewater sampling: When a poliovirus of concern (WPV, VDPV, or Sabin/Sabin-like 2) is confirmed in an environmental wastewater sample by the NML, local/regional health authorities should begin investigations within 24 hours.

Key information to gather includes:

- **Population Characteristics**: Size, demographics, polio vaccination coverage, presence of un/under-vaccinated groups, and vaccine acceptance.
- **Population Movement**: Migration patterns, travel links, and cultural ties with affected areas.
- **Catchment Area Details**: Location, sewer network configuration, and housing density.
- **Relevant Institutions**: Health facilities, schools, poliovirus essential facilities (PEFs), transportation hubs, and settlement houses.
- **Sampling Information**: Schedule, frequency, completeness, and timeliness of sample collection

For further details, consult the Global Polio Eradication Initiative Standard Operating Procedure: SOPs-for-Polio-ES-enhancement-following-outbreak-20210208.pdf

Vaccination

Immunization coverage should be assessed, and targeted IPV immunization campaigns may be needed for high-risk populations, such as those near a detected event or in communities with low vaccination rates. The National Advisory Committee on Immunization (NACI) may provide specific recommendations, and community engagement (e.g., faith leaders) could be included in vaccination efforts.

Both federal and PT partners should ensure proper public communication about vaccination schedules and up-to-date immunization.

Communication

Effective, clear, and coordinated communication is crucial during a poliovirus event or outbreak to support response efforts, inform the public about risks, and promote health protection measures, including vaccination and surveillance.
Key communication strategies should include:

- Advising healthcare professionals to consider polio in patients with polio-like symptoms, especially those who are unvaccinated, under-vaccinated, or have recent travel history to polio-endemic areas.
- Ensuring patients are up to date on polio vaccinations according to the Canadian Immunization Guide.
- Raising awareness about the risks of polio, especially for children and families.
- Encouraging vaccination uptake and strengthening community confidence in vaccination.

Communication considerations include:

- Aligning messaging and approaches across federal, provincial, and territorial (FPT) authorities.
- Engaging stakeholders to reach target audiences, particularly marginalized and remote communities.
- Being transparent and timely in sharing information, acknowledging uncertainties, and outlining next steps.
- Using traditional media, social media, and existing platforms like professional networks and public health alerts for communication.

Revisions

Date	Change
February 12, 2025	NEW

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Clinical specimen collection protocol

Stool is the preferred clinical specimen for diagnosing polio.
For diagnostics, ensure collection of at least two stool samples (taken at least 24 hours apart and minimum 2 grams per sample) within 14 days after symptom onset or up to **6 weeks** if earlier collection is not possible for viral studies.

- Stool (two samples taken at least 24 hours apart) is the required clinical specimen for the laboratory investigation and diagnosis of poliovirus infections. Stool collected from diapers are acceptable samples. A stool sample is preferred to a rectal swab because the diagnosis of poliovirus is more reliable.

A case can be considered no longer infectious based on three consecutive negative stool samples each collected at least 24 hours apart.

A high-risk contact subject to stool sampling can be determined not to be infected, based on two consecutive negative stool samples taken at least 48 hours apart, with the first collected at least 4 days after the contact's last exposure to the case before infection prevention and control measures were initiated.

Table 1. Stool Specimen Requirements

Minimum Volume Required	2–8 g
Turnaround Time	Total turnaround time for the complete polio testing algorithm is 28 calendar days: • PV Virus isolation in cell culture: 14 days • PV Intratypic Differentiation and VDPV screening by real time PCR: 7 days • • PV VP1 Sequencing: 7 days
Collection, Storage, and Preservation of Specimen Prior to Shipping	At least two stool specimens collected at least 24 hours apart, ideally within 14 days after onset Samples can be collected up to 6 weeks after onset if it is not possible to collect earlier Place in sterile leak proof container Keep specimens frozen (≤ -20C) Do not add transport medium
Shipping Instructions	NML does not accept routine shipments on weekends or holidays. Please make sure packages arrive Monday–Friday. Ship specimens frozen on dry ice according to TDG regulations.

Source: guidance-response-management-poliovirus-event-outbreak-canada.pdf

Please see the following pages for the Polio Investigation form.

https://www.paho.org/sites/default/files/2020-02/polio-formulario-AFPcs-frm-ENG%20%281%29.pdf

Investigation Form – POLIO

(Modified: December 3, 2019)

Complete this form for any person aged <15 years with acute flaccid paralysis, and for a person of any age in whom polio is suspected.

I IDENTIFICATION

Case Number: _____

Country: _____

Province/State: _____

Municipality: _____

Locality/Neighborhood: _____

Detected by: ☐ 1=Spontaneous consultation 2=Laboratory 3=Institutional Search 4=Community Case Search 6=Contact Investigation 8=Community Report 88=Other 99=Unknown

Health Service Name: _____

Health Service Telephone: _____

Reported by: _____

Date of Consultation: ___/___/___ (Day Month Year) Date Reported, Local: ___/___/___

Date of Investigation: ___/___/___ *Date Reported, National* ___/___/___

Type of provider reporting: ☐ 1=Public 2=Private 88=Other, Specify _____

II PATIENT INFORMATION

Patient's first and last name: _____

Name of the mother or guardian: _____ **Nationality** _____

Address: _____

Telephone: _____

Landmarks to locate the house: _____

Patient Occupation: _____

Type of locality: ☐ 1=Urban 2=Periurban 3=Rural

Work or School Address _____

Patient's Sex: ☐ 1=Male 2=Female

Patient's date of birth: ___/___/___ (Day Month Year)

If date of birth unavailable, age: _____ _____ Years _____ Months

III VACCINATION HISTORY

Is vaccinated against Polio ☐ 1=SI 2=No 88=unknown

Type of Vaccine*	Number of doses**	Date of last dose (Day Month Year)	Source of vaccination Information †
		___/___/___	
		___/___/___	
		___/___/___	

(*) 1=OPV, 2=IPV, 99=Unknown
(**) 0=Zero dose, 1=One dose, 2=Two, 3=Three, etc., 99=Unknown
(†) 1=Vaccination card, 2=Health service record, 3=Verbal

IV CLINICAL DATA

PRODROME

Fever: ☐
Respiratory: ☐
Gastrointestinal: ☐
(1=Yes 2=No 88=Unknown)

PARALYSIS

Date of Onset: ___/___/___ (Day Month Year)

Fever at paralysis onset: ☐ 1=Yes 2=No 88=Unknown

Cranial pairs: ☐ 1=Yes 2=No 88=Unknown

Respiratory: ☐

SITE OF FLACCID PARALYSIS

	1=Yes 2=No 88=Unknown	1=Proximal 2=Distal 3=Both	REFLEXES 1=Increased 2=Decreased 3=Absent 4=Normal 88=Unknown	SENSATION 1=Increased 2=Decreased 3=Absent 4=Normal 88=Unknown
Right arm	☐	☐	☐	☐
Left arm	☐	☐	☐	☐
Right leg	☐	☐	☐	☐
Left leg	☐	☐	☐	☐

SIGNS

Muscle pain: ☐
Meningeal: ☐
(1=Yes 2=No 88=Unknown)

PROGRESSION

Direction: ☐ 1=Ascending 2=Descending 3= Other

Number of days for paralysis to fully develop: _____

If hospitalized, hospital name: _____

Admission date: ___/___/___ (Day Month Year) Hospital Record. #: _____

Death?: ☐ 1=Yes 2=No 88=Unknown

If Yes, Date: ___/___/___ (Day Month Year) Primary cause of death: _____

Comments: _____

V LABORATORY TESTING

Sample		Laboratory Test												
		Virus Isolation						Intratipic Differentiation (ITD)						
Specimen #	Specimen obtained (Day/Month/Year)	Date sample sent to Lab. (Day/Month/Year)	**Name of Lab. processing the sample**	Date received (Day/Month/Year)	# Specimen ID in lab.	Result †	Date result (Day/Month/Year)	Date sent to Ref. Lab. (Day/Month/Year)	Ref. Lab. name	Date received by Ref. Lab. (Day/Month/Year)	Results ‡	Date ITD (Day/Month/Year)	Natl. vs Ref. discordance 1=Yes 2=No	Final result §
	__/__/__	__/__/__		__/__/__			__/__/__	__/__/__		__/__/__		__/__/__		
	__/__/__	__/__/__		__/__/__			__/__/__	__/__/__		__/__/__		__/__/__		

(†) 0=Negative, 4=Non Polio Enterovirus, 44= Poliovirus &NPEV, 6=Inadequate, 8=Other Virus, 77=Poliovirus

(‡) 1=P1Sabin, 2=P2Sabin, 3=P3Sabin, 6=Inadequate, 7=P1 Vaoo. Derived, 8=P2 Vaoo. Derived, 9=P3 Vaoo. Derived, 10=P1 Wild, 11=P2 Wild, 12=P3 Wild

(§) Official Result

Comments: _____

Sample	Name	Age (YY/MM)	No. OPV Doses	Date of last dose
Contact 1	_____	_____	_____	___/___/___
Contact 2	_____	_____	_____	___/___/___

* Contacts should be <5 years of age and not vaccinated within 30 days. List additional contacts on separate page.

Contacts* (If necessary)

	Laboratory Test													
		Virus Isolation						Intratypic Differentiation (ITD)						
Date taken (Day/Month/Year)	Date sample sent to Lab. (Day/Month/Year)	Lab. name	Date received (Day/Month/Year)	# specimen ID in lab.	Result †	Date Result (Day/Month/Year)	Date sent to Ref. Lab. (Day/Month/Year)	Name Ref. Lab.	Date received by Ref. Lab (Day/Month/Year)	Results ‡	Date ITD (Day/Month/Year)	Natl. vs Ref. discordance 1=Yes 2=No	Final result §
__/__/__	__/__/__		__/__/__			__/__/__	__/__/__		__/__/__		__/__/__		
__/__/__	__/__/__		__/__/__			__/__/__	__/__/__		__/__/__		__/__/__		

(†) 0=Negative, 4=Non Polio Enterovirus, 44= Poliovirus &NPEV, 6=Inadequate, 8=Other Virus, 77=Poliovirus

(‡) 1=P1Sabin, 2=P2Sabin, 3=P3Sabin, 6=Inadequate, 7=P1 Vaoo. Derived, 8=P2 Vaoo. Derived, 9=P3 Vaoo. Derived, 10=P1 Wild, 11=P2 Wild, 12=P3 Wild

(§) Official Result

Comments: _____

VI FOLLOW-UP

Date of 60 days follow-up: ___/___/___ (Day Month Year)

Residual paralysis compatible with polio at 60 days: ☐ (1=Yes 2=No 88=Unknown)

Atrophy: ☐ (1=Yes 2=No 88=Unknown)

VII CONTROL

Date of mop-up vaccination begun: ___/___/___ (Day Month Year) Population <5 years: _____ Total <5 years vaccinated: _____

Estimated number of households in target area: _____ Number of households visited: _____

VIII CLASSIFICATION

FINAL CLASSIFICATION: ☐ Date classified: ___/___/___ (Day Month Year) 1=Confirmed Polio Wild 2=Confirmed Polio Vaoo. Derived 3=Confirmed Polio Vaoo. Associated 4=Polio Compatible 5=Discarded	CLASSIFICATION CRITERIA: ☐ 1=Laboratory 2=Lost to Follow Up 3=Death 4=With Residual Paralysis 5=Without Residual Paralysis	IF DISCARDED, DIAGNOSIS: ☐ 1=Guillain-Barré 2=Traumatic Neuritis 3=Transverse Myelitis 4=Tumor 99=Unknown 88=Other _____	

IX INVESTIGATOR

Name of investigator: _____ Signature _____ Date: ___/___/___ (Day Month Year)

Title: _____ Office: _____

Comments: _____