



# Poliomyelitis

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The following chapter is adapted with permission from Alberta Health, for additional guidance related to the management of Poliomyelitis see [Alberta Public Health Disease Management Guidelines: Poliomyelitis](#).

## 1. CASE DEFINITION

### Confirmed Case

- Clinical illness\* with laboratory confirmation of infection and one of the following:
  - Isolation of polio virus (vaccine or wild type) from an appropriate clinical specimen \*\* **OR**
  - Detection of polio virus RNA in an appropriate clinical specimen **OR**
  - Clinical illness in a person who is epidemiologically linked to a laboratory confirmed polio case
- Confirmed Case Categories
  - Once a case is confirmed, it can be classified as either
    - Wild type virus
      - Laboratory investigations indicate that the acquired infection was caused by a wild type virus, either from travel, a contact who traveled, or a local virus in the environment.
      - **Imported**: travel or residence in a polio-endemic area 30 days or less before onset of symptoms.
      - **Import-related**: epidemiologically linked to someone who has traveled or resided in a polio-endemic area within 30 days of onset of symptoms.
    - Vaccine associated virus



- Laboratory investigations indicate that the acquired infection was caused by a vaccine-type virus either from the receipt of the oral polio vaccine (OPV), or through a contact who received this vaccine type
- Recipient: the illness began 7-30 days after the patient received oral polio vaccine (OPV).
- Contact: the patient was shown to have been in contact with an OPV-recipient and became ill 7-60 days after the contact was vaccinated.
- Possible contact: the patient had no known direct contact with an OPV-recipient and no history of receiving OPV, but the paralysis occurred in an area in which a mass vaccination campaign had been in progress 7-60 days before the onset of paralysis.
- No known contact: the patient had no known contact with an OPV-recipient and no history of receiving OPV, and the paralysis occurred in an area where no routine or intensive OPV vaccination had been in progress.
  - In Canada, this would include all provinces and territories.

### Probable Case

Clinical illness without detection of polio virus from an appropriate clinical specimen and without evidence of infection with other neurotropic viruses but with one of the following laboratory confirmations of infection:

- Significant rise (e.g., four-fold or greater) in polio virus antibody titer in paired sera **OR**
- Positive serologic test for polio IgM antibody in the absence of recent immunization with polio virus-containing vaccine

### Suspect Case

Clinical illness and no laboratory confirmation of infection (no polio virus detection or serologic evidence), including negative test results, and inadequate or no investigation.

\*Clinical illness is characterized by all the following:

- Acute flaccid paralysis of one or more limbs AND
- Decreased or absent deep tendon reflexes in the affected limbs AND
- No sensory or cognitive loss AND
- No other apparent cause (including laboratory investigation to rule out other causes of a similar syndrome) of neurological deficit present 60 days after onset of initial symptoms, unless the patient has died

\*\* For information regarding current specimen collection and submission information see [Public Health Laboratory](#) for more information



## 2. DIAGNOSIS

- All suspected cases of polio should have a throat swab and Cerebrospinal fluid (CSF) submitted for viral isolation.
- Collect one stool sample (or rectal swab if stool sample is not available) within two weeks (up to six weeks) after onset of paralysis for viral studies.
- A serum specimen should be collected immediately for polio serology.
- A fourfold rise in antibody titers indicates infection.
- In the absence of a positive culture, acute, and convalescent neutralizing antibody titers can be examined to detect a fourfold rise indicative of infection.
- In some cases, these antibodies may already be present at the time of paralysis and no rise is demonstrated.
- A second serum specimen should be collected two weeks later (if patient presents in the acute phase presentation) or one month later (if the patient presents in the convalescent phase)
  - Serums samples should be tested in parallel for poliovirus antibody titers, polio-specific IgG, and polio-specific IgM
- With the authorization of the Chief Public Health Officer (CPHO) or designate, all samples should be sent to Alberta Provincial Laboratory and further investigated to determine whether the virus is wild vs. vaccine strain.
- For more information, refer to the [Alberta Provincial Laboratory Guide to Services](#).
- Conduct neurologic investigations such as nerve conduction studies, MRI, CT scans, and electromyography.

## 3. REPORTING

### Health Care Professionals

- Confirmed, probable, or suspect cases are to be reported to the Office of the Chief Public Health Officer (OCPHO) by telephone (867) 920-8646 **immediately** after diagnosis is made or opinion is formed, **AND**
- Complete and fax (867) 873-0442 the [Communicable Disease Investigation Report Form](#) to the OCPHO to within **24 hours**
- **Immediately** report all outbreaks or suspect outbreaks by telephone to the OCPHO

### Laboratories

- Report all positive results to the OCPHO by phone (867) 920-8646 **immediately AND**
- Fax (867) 873-0442 positive results to the OCPHO **within 24 hours**

## 4. OVERVIEW

For more information about poliomyelitis:

- The Government of Canada: [Canada/Poliomyelitis](#)
- Centres for Disease Control and Prevention: [CDC/ Poliomyelitis](#)



- World Health Organization: [WHO/ Poliomyelitis](#)

### Causative Agent

- Poliovirus is a member of genus *Enterovirus*, family Picornaviridae.
- There are three serotypes: types 1, 2, and 3.
- The virus is extremely stable and can remain viable in the environment for a long period of time.
- It is rapidly inactivated by heat, formaldehyde, chlorine, and ultraviolet light.

### Clinical Presentation and Major Complications

For information regarding Clinical Presentation and Major Complications see [Alberta Public Health Disease Management Guidelines: Poliomyelitis](#).

### Transmission

- Polio virus is highly contagious and is primarily spread through the fecal-oral route and sometimes through direct contact with oral secretions.
- Polio is communicable for as long as the virus is shed in the throat (36 hours to 12 days after exposure) or in the stool (72 hours to 42 days after exposure, or until feces are culture negative).
- Polio is most communicable in the few days before and after the onset of symptoms.
- Rarely, vaccine-derived polio can occur following immunization with OPV which is a live virus vaccine that is no longer used in Canada.
  - Transmission is most common after the first dose.
  - Transmission to contacts is rare.

### Incubation Period

- The incubation period is 9-12 days with a range of 5-35 days to the onset of the prodromal period and 11-17 days with a range of 8-36 days to the onset of paralysis.
- Vaccine associated polio's incubation period is 7-21 days following the administration of the OPV.
- Cases occurring from contacts of the OPV recipient appear within 20-29 days.

### Clinical Guidance

- For patient-specific clinical management consult your local healthcare professional, paediatrician, infectious disease specialist or the [NWT Clinical Practice Guidelines](#).

## 5. PUBLIC HEALTH MEASURES

### Management of Cases

- Assess polio immunization status (total number of doses of oral and/or inactivated polio vaccine received).



- Obtain relevant medical history including immunocompromised status or abnormal neurological history.
- In cases of wild-virus disease consider:
  - Travel to or residing in another country within 30 days prior to the onset of this illness
  - Household member or other close contacts who have traveled to or resided in another country within 30 days prior to the onset of the child's illness.
- In cases of vaccine-associated disease assess for:
  - Receipt of oral polio vaccine (OPV) 7-30 days prior to the onset of current illness
  - Recent (7-60 days) presence in an area where a mass immunization campaign had been in progress
  - Household members or other close contacts who have received OPV 7-60 days prior to the onset of this child's illness.
- Confirm diagnosis by ensuring all appropriate specimens have been collected and submitted for testing.
- Obtain history of illness, including onset, signs, and symptoms.
- Determine the period of communicability for the case.
- Isolation with routine practices and contact precautions for hospitalized patients.
- Household measures should include routine practices and contact precautions as well as routine cleaning and disinfection of the household.
  - By the time an initial infection is suspected in a household poliomyelitis has usually already spread, however, the above measures are recommended.
- Throat discharge, feces, and contaminated articles should be managed with routine procedures and additional contact precautions.
- In areas with modern sewage disposal, feces, and urine can be discharged directly into sewers.
- In areas with sewage pump out, contact the environmental health officer (867-767-9066 ext. 49262) and ensure sewage handlers are fully immunized against polio.

### Management of Contacts

- Contacts are defined as,
  - Persons living in the same household or having close contact with the case (e.g., sharing sleeping arrangements or playing together for **more than 4 hours**) within 30 days before the case's onset of illness,
  - Children attending the same daycare as the case,
  - Persons having contact with stool or fecal matter of the case within 30 days before the case's onset of illness, without using infection control precautions
- Identify symptomatic contacts and refer to physician for assessment.
- Often the virus has already been transmitted by the time the initial case is identified, however contacts may be quarantined as per order from the CPHO or designate.
- A Health Care Provider will assess polio immunization history and update vaccines as needed.

### Prevention



- Poliomyelitis is a vaccine preventable disease.
- Vaccination against polio is publicly funded in the NWT and offered according to the [NWT Immunization Schedule](#).
- The polio vaccine used in Canada- Inactivated Polio Vaccine (IPV)- provides immunity to all three types of poliovirus in over 90% of individuals following two doses of vaccine given at least 6 weeks apart and close to 100% immunity following a booster dose given 6-12 months later.
- For more information on polio vaccination refer to the [Canadian Immunization Guide](#).

## 6. PUBLIC & HEALTH PROFESSIONAL EDUCATION

- Government of Canada: [Poliomyelitis](#)
- Center for Disease Control and Prevention (CDC): [CDC-Poliomyelitis](#)
- World Health Organization (WHO): [WHO-Poliomyelitis](#)

## 7. EPIDEMIOLOGY

- The incidence of polio in Canada has reduced markedly due to immunization programs introduced in the 1950s.
- Active surveillance and monitoring in children under the age of 15 is carried out by the Public Health Agency of Canada.
- For more information on the epidemiology of poliomyelitis in the NWT see: [Epidemiological Summary of Communicable Diseases HSS Professionals](#)

## 8. REFERENCES

Information in this chapter is adapted with permission from Alberta Health. For more information on Poliomyelitis [see Alberta Public Health Disease Management Guidelines: Poliomyelitis](#).

1. Government of Canada Poliomyelitis (Polio): For health Professionals: <https://www.canada.ca/en/public-health/services/diseases/poliomyelitis-polio/health-professionals.html>