

Ontario Public Health Standards:
Requirements for Programs, Services and Accountability

Infectious Disease Protocol

Appendix 1:

Case Definitions and Disease-Specific Information

Disease: Poliomyelitis, acute

Effective: May 2022

Poliomyelitis, acute

Communicable

Virulent

[Health Protection and Promotion Act \(HPPA\)](#)

[Ontario Regulation \(O. Reg.\) 135/18 \(Designation of Diseases\)](#)

Provincial Reporting Requirements

Confirmed case

Probable case

Canada is certified as being polio-free. In any country that has previously interrupted transmission of wild polio virus, a single case is considered a public health emergency.

Please note that this disease requires immediate notification to the Office of Chief Medical Officer of Health, Public Health of the Ministry of Health (ministry). The reporting of this event will be notified to Public Health Agency of Canada (PHAC) and the World Health Organization (WHO) under the International Health Regulations. Reporting of this disease is by phone through the ministry during business hours by calling 416-327-7392. After-hours and on weekends and holidays please call the ministry's Health Care Provider Hotline at 1-866-212-2272.

As per Requirement #3 of the "Reporting of Infectious Diseases" section of the *Infectious Diseases Protocol, 2018* (or as current), the minimum data elements to be reported for each case are specified in the following:

- [O. Reg. 569](#) (Reports) under the HPPA;³
- The Case and Contact Management (CCM) software guides; For certain vaccines, information to be entered into the applicable provincial inventory system; and
- Bulletins and directives issued by Public Health Ontario (PHO).

Type of Surveillance

Case-by-case

Case Definition

Confirmed Case

Clinical illness (see Clinical Evidence section) with laboratory confirmation of infection:

- Isolation of polio virus (vaccine or wild type) from an appropriate clinical specimen (e.g., stool, throat, cerebrospinal fluid [CSF])

OR

- Detection of polio virus ribonucleic acid (RNA) by nucleic acid amplification test (NAAT)

OR

Clinical illness in a person who is epidemiologically linked to a laboratory-confirmed case

Probable Case

Any person **without symptoms of paralytic poliomyelitis**, with laboratory confirmation of infection:

- Isolation of polio virus (vaccine¹ or wild type) from an appropriate clinical specimen (e.g., stool, throat, CSF)

OR

- Detection of polio virus RNA by NAAT

¹ Except where there has been vaccination with oral polio virus (OPV) in the 30 days prior to the date of specimen collection.

Outbreak Case Definition

Not applicable

Clinical Information

Clinical Evidence

Clinical illness is characterized by all of the following:

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

Clinical Presentation

Most polio infections (90% to 95%) are asymptomatic. Symptomatic polio is most often recognized by the acute onset of flaccid paralysis. However, severity can range from subclinical infection or non-specific fever in 90% to paralytic disease in less than 1% of infections.¹ Symptoms of minor illness include fever, headache, malaise, nausea and vomiting and can progress to major disease distinguished by severe muscle pain and stiffness of the neck and back with or without flaccid paralysis.¹ Aseptic meningitis occurs in approximately 1% of infected individuals.¹

Paralysis is most often asymmetric and accompanied by fever; the maximum extent of paralysis is reached in 3 to 4 days.¹ Paralysis may improve during the convalescent period; however, paralysis that persists beyond 60 days is likely permanent.¹ Paralysis of the respiratory or swallowing muscles can be life-threatening.¹ The case-fatality ratio for paralytic polio is 2% to 5% in children and 15% to 30% for adults.²

Laboratory Evidence

Laboratory Confirmation

Any of the following will constitute a confirmed case of poliomyelitis:

- Isolation of polio virus (vaccine or wild type) from an appropriate clinical specimen
 - Stool samples: Collection of two stool samples within two weeks (up to six weeks) after the onset of paralysis for viral studies
 - Viral throat swab
 - CSF
- Detection of polio virus-specific RNA by NAAT in an appropriate clinical specimen.

Note: Serology testing is not recommended for diagnosis of polio or non-polio enterovirus infection.

Approved/Validated Tests

- Standard culture for poliovirus
- NAAT for poliovirus/enterovirus RNA

Note: For any suspected cases of polio, contact the Medical Microbiologist at Public Health Ontario Laboratories.

Further virus characterization is indicated for epidemiological public health and control purposes. Polio virus strain typing is done using sequencing methodologies (molecular serotyping) at the National Microbiology Laboratory.

Indications and Limitations

The commercially available NAAT does not differentiate polioviruses from other non-polio enteroviruses.

For further information about human diagnostic testing, contact the [Public Health Ontario Laboratories](#).

Case Management

Thorough investigation of any case is essential to maintain the Polio Elimination Status in Canada, and to determine the source of infection.

In addition to the requirements set out in the Requirement #2 of the "Management of Infectious Diseases – Sporadic Cases" and "Investigation and Management of Infectious Diseases Outbreaks" sections of the *Infectious Diseases Protocol, 2018* (or as current), the board of health shall investigate cases to determine the source of infection. Refer to Provincial Reporting Requirements above for relevant data to be collected during case investigation. The following disease-specific information should also be obtained during case management:

- Relevant medical history including immunocompromised status or abnormal neurological history;
- Travel to or residing in another country within 30 days prior to the onset of this illness, particularly polio-endemic or infected countries, or recent (seven to 60 days) presence in an area where OPV is used;
- Household members or other close contacts who have traveled to or resided in another country within 30 days prior to the onset of the case's illness, or receipt of OPV seven to 60 days prior to the onset of this case's illness;
- Polio immunization status: total number of doses of IPV or OPV as well as dates, particularly receipt of OPV seven to 30 days prior to the onset of current illness;

Exclude cases that are food handlers until proof of immunity is demonstrated or negative stool sample is obtained.

No specific treatment is available; however, attention should be given during acute illness to complications of paralysis.

Contact Management

Contacts are:

- Persons living in the same household or having close contact with the case (e.g., sharing sleeping arrangements or playing together for > four hours) within 30 days before the case's onset of illness;
- Children attending the same child care setting as the case; and
- 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.⁷

Even though contacts may already be infected, they should be assessed for immunization status and if not fully immunized receive updated doses as per the current *Publicly Funded Immunization Schedules for Ontario*.⁴

Quarantine measures have not been found to be of value in the community.¹ Consider exclusion of contacts from food handling until proof of immunity is provided. Further quarantine measures could be considered in consultation with PHO.

Outbreak Management

Not applicable.

Prevention and Control Measures

In the event that publicly funded vaccine doses are needed for case and contact management, the board of health should contact the ministry immunization program at vaccine.program@ontario.ca as soon as possible.

Personal Prevention Measures

Immunize as per the current [Publicly Funded Immunization Schedules for Ontario](#).⁴

In Ontario, the [Immunization of School Pupils Act](#) (ISPA) is the legislation that governs the immunization of school pupils for the designated diseases included in the Act. All students without a valid exemption must have documented receipt of polio containing vaccine according to the specified schedule.⁵

In Ontario, the [Child Care and Early Years Act, 2014](#) (CCEYA) is the legislation that governs licensed child care settings. Pursuant to [O. Reg. 137/15](#) under the CCEYA, children who are not in school and who are attending licensed child care settings must be immunized as recommended by the local medical officer of health prior to being admitted. Under the CCEYA parents can provide a medical reason as to why the child should not be immunized or object to immunization on religious/conscience grounds.⁶

Inactivated polio virus (IPV) containing vaccines produce immunity to all three types of poliovirus in over 95% of vaccinees following three doses of vaccine, and in close to 100% following a booster dose.² In addition, proper hand hygiene should be maintained.

Infection Prevention and Control Strategies

- In addition to routine practices, contact precautions are recommended for hospitalized cases for the duration of hospitalization.¹
- Suspected cases and their families should telephone the local board of health to arrange for medical assessment to limit exposures in health care settings.
- Isolation in the household is of minimal value as the virus has often infected susceptible close contacts by the time poliomyelitis is recognized.¹

Refer to [PHO's website](#) to search for the most up-to-date information on Infection Prevention and Control (IPAC).

Disease Characteristics

Aetiologic Agent - Poliomyelitis is caused by the poliovirus, a member of the genus *Enterovirus*. There are three types: poliovirus type 1, 2, and 3, and they can all cause paralysis.¹ However, the majority of polio infections (90% to 95%) do not have any symptoms.²

Infection can also occur rarely as a result of vaccine-associated paralytic poliomyelitis (VAPP) following immunization with the oral polio vaccine (OPV). OPV contains live attenuated virus. It is not used in Canada but is used in some parts of the world.^{1,2}

Modes of Transmission - Polio is transmitted person to person, predominantly through the fecal-oral and rarely via respiratory route.^{1,2} Rarely through milk and foodstuff contaminated with stool.¹

Incubation Period - Commonly 7-14 days for paralytic cases; there has been a reported range of 3 to possibly 35 days.¹

Period of Communicability - Not precisely defined, however it is communicable for as long as the virus is shed in the throat and/or the stool; cases are most infectious in the days before and after onset of symptoms. Virus usually persists in the throat for 1 week and in stool for 3-6 weeks.¹

Poliovirus is shed in throat secretions as early as 36 hours to 7 days and in the stool 72 hours to weeks after exposure to infection in both clinical and inapparent cases.¹

Persons who receive OPV can have poliovirus present in the throat for 1 to 2 weeks and excreted in stool for several weeks following immunization.²

Reservoir - Humans, most frequently in people with inapparent infections, especially children. There are no long-term carriers of wild type polio virus.¹

Host Susceptibility and Resistance - Susceptibility is universal in those not immunized.¹ Infants born to immune mothers have transient passive immunity.¹ Unvaccinated contacts of those immunized with OPV are at increased risk of VAPP and may also benefit from bystander immunity. Type-specific immunity is felt to be life-long for both clinically recognizable and inapparent infections.¹

Please refer to [PHO's Reportable Disease Trends in Ontario reporting tool](#) for the most up-to-date information on infectious disease trends in Ontario.

For additional national and international epidemiological information, please refer to the Public Health Agency of Canada and the World Health Organization.

In Ontario, acute flaccid paralysis (AFP) is a reportable syndrome. For further information, refer to Appendix 1, Case Definitions and Disease-Specific Information, Acute Flaccid Paralysis (AFP).

Surveillance for AFP is conducted by PHAC in conjunction with the Canadian Pediatric Society for children less than 15 years of age as part of ensuring Canada remains polio-free.¹

Comments

Detection and investigation of **all** acute flaccid paralysis cases is necessary to rule out poliovirus infection. Acute flaccid paralysis surveillance is used to monitor Canada's polio-free status. For further information, refer to the Case Definitions and Disease-Specific Information for Acute Flaccid Paralysis:

- Stool specimens and throat swabs are preferred specimens. Other specimens include CSF and bronchoalveolar lavage
- Two stool specimens and a throat swab should be submitted from all cases of acute flaccid paralysis to allow appropriate testing for poliomyelitis
- For immunocompromised individuals, a negative test does not rule out infection as poliovirus may be excreted intermittently
- Asymptomatic shedding of the poliovirus in the stool may occur for several weeks after receipt of oral polio vaccine (OPV). While this vaccine is not available in Canada, it is still used elsewhere in the world, therefore immunization history and travel history should be collected.
- Serology testing is not recommended for diagnosis of polio or non-polio enterovirus infection.

Confirmed cases of poliomyelitis can be further subdivided into the following two categories, based on laboratory findings:

a) Wild virus

Laboratory investigation implicates wild-type virus. This group is further subdivided as follows:

- Imported: travel in or residence in a polio-endemic area 30 days or less before onset of symptoms
- Import-related: epidemiologic link to someone who has travelled in or resided in a polio-endemic area within 30 days of onset of symptoms
- Indigenous: no travel or contact as described above. Please note there have been no indigenous cases of poliomyelitis in Canada since 1977.

b) Vaccine-associated virus

Laboratory investigation implicates vaccine-type virus. This group is further subdivided as follows:

- Recipient: the illness began after the patient received OPV
- Contact: the patient was shown to have been in contact with an OPV-recipient and became ill seven to 60 days after the contact was immunized
- 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 using OPV had been in progress seven to 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 immunization had been in progress. In Canada, only IPV is available in all provinces and territories

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Document History

Revision Date	Document Section	Description of Revisions
April 2022	Entire Document	New template. Appendix A and B merged. No material content changes.
April 2022	Epidemiology: Occurrence section	Removed.
April 2022	ICD Codes	Removed.