

Appendix B: Provincial Case Definitions for Diseases of Public Health Significance

Disease: Poliomyelitis, acute

Effective: February 2019

Poliomyelitis, acute

1.0 Provincial Reporting

Confirmed cases of disease

2.0 Type of Surveillance

Case-by-case

3.0 Case Classification

3.1 Confirmed Case

Clinical illness (see section 5.0) 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

3.2 Probable Case

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

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

OR

- Detection of polio virus RNA by NAAT

4.0 Laboratory Evidence

4.1 Laboratory Confirmation

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

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

- 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.

4.2 Approved/Validated Tests

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

For further information about human diagnostic testing, contact the Public Health Ontario Laboratories or refer to the Public Health Ontario Laboratory Services webpage: <http://www.publichealthontario.ca/en/ServicesAndTools/LaboratoryServices/Pages/default.aspx>

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.

4.3 Indications and Limitations

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

5.0 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)

6.0 ICD-10 Code(s)

A80 Acute Poliomyelitis

7.0 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 Disease-Specific Chapter 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

8.0 Sources

Committee on Infectious Diseases, American Academy of Pediatrics. Section 3: Summaries of Infectious Diseases: Poliovirus Infections. In: Kimberlin DW, Brady MT, Jackson MA, Long SS, editors. Red Book: 2018 Report of the Committee on Infectious Diseases. 31 ed. Itasca, IL: American Academy of Pediatrics; 2018.

Public Health Agency of Canada. Poliomyelitis. In: Case Definitions for Communicable Diseases under National Surveillance. Canada Communicable Disease Report. 2009;35S2.

Routh JA, Oberste SM, Patel M. Poliomyelitis. 2017. In: Manual for the Surveillance of Vaccine-Preventable Diseases [Internet]. 6 ed. Atlanta, GA: Centers for Disease Control and Prevention, [cited May 2, 2018]. Available from: <https://www.cdc.gov/vaccines/pubs/surv-manual/index.html>

World Health Organization. Polio vaccines: WHO position paper - March 2016. Geneva: World Health Organization; 2016. Available from: http://www.who.int/immunization/policy/position_papers/polio/en/

9.0 Document History

Table 1: History of Revisions

Revision Date	Document Section	Description of Revisions
December 2014	General	New template. Acronym “NAT” changed to “NAAT” throughout document. Title of Section 3.1, addition of “Paralytic poliomyelitis”. Deletion of Probable Case definition. Title of Section 8.0 changed from “References” to “Sources”. Section 9.0 Document History added.

Revision Date	Document Section	Description of Revisions
December 2014	3.1 Confirmed Case – Paralytic poliomyelitis	<p>First paragraph changed from “Clinically compatible signs and symptoms of paralytic polio with no other apparent cause and with travel to a polio endemic region” to “Clinical illness (see section 5.0) with laboratory confirmation of infection”.</p> <p>Removed “AND” after first paragraph.</p> <p>First bullet changed from “Isolation of vaccine or wild type of poliovirus from an appropriate clinical specimen...” to “Isolation of polio virus (vaccine or wild type) from an appropriate clinical specimen...”</p> <p>First bullet, addition of “throat” as an example of a clinical specimen and removal of “pharyngeal swab”.</p> <p>Last sentence changed from “Clinically compatible signs and symptoms in a person with an epidemiologic link to a laboratory-confirmed case” to “Clinical illness in a person who is epidemiologically linked to a laboratory-confirmed case”.</p>
December 2014	3.2 Confirmed Case – Non-Paralytic poliomyelitis	Section added.
December 2014	4.1 Laboratory Confirmation	<p>Section updated to include the list of appropriate clinical specimens.</p> <p>Second bullet changed from “Positive for polio virus-specific RNA by NAT” to “Detection of polio-virus specific RNA by NAAT in an appropriate clinical specimen.”</p> <p>Addition of the following: “Note: Serology testing is not recommended for diagnosis of polio or non-polio enterovirus infection.”</p>

Revision Date	Document Section	Description of Revisions
December 2014	4.2 Approved/Validated Tests	<p>Link to access further testing information provided in the third bullet.</p> <p>Addition of a note under the bullets “Note: For any suspected cases of polio, contact the Medical Microbiologist at Public Health Ontario Laboratories (PHOL).</p> <p>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 (NML).”</p>
December 2014	4.3 Indications and Limitations	<p>Inclusion of the word “non-polio” before “enteroviruses.”</p> <p>Second bullet removed.</p>
December 2014	5.0 Clinical Evidence of Paralytic poliomyelitis	<p>Section heading updated to include “of Paralytic poliomyelitis”.</p> <p>First sentence changed from “Clinically compatible signs and symptoms are...” to “Clinical illness is...”</p> <p>Addition of fifth bullet “No other apparent cause (including laboratory investigation to rule out other causes of a similar syndrome)”.</p>
December 2014	6.1 ICD-10 Codes(s)	Changed from “G05.2, G04.1, T50.9, Y59.0, A80.3 Poliomyelitis” to “A80 Acute Poliomyelitis”.
December 2014	6.2 ICD-9/ICD-9CM Code(s)	Changed from “323.2, 323.5, 979.5, E949.5 (polio vaccine poisoning), 045.1 (acute polio with other paralysis) Poliomyelitis to “045 Acute Poliomyelitis”.
December 2014	7.0 Comments	Section revised.
December 2014	8.0 Sources	Updated.

Revision Date	Document Section	Description of Revisions
February 2019	General	Minor revisions were made to support the regulation change to Diseases of Public Health Significance and references were updated.

