

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

Infectious Disease Protocol

Appendix 1:

Case Definitions and Disease-Specific Information

Disease: Cholera

Effective: May 2022

Cholera

Communicable

Virulent

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

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

Provincial Reporting Requirements

Confirmed case

Probable case

As per Requirement #3 of the "Reporting of Infectious Diseases" section of the *Infectious Diseases Protocol, 2022* (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;⁵
- The iPHIS User Guides published by Public Health Ontario (PHO); and
- Bulletins and directives issued by PHO.

Type of Surveillance

Case-by-case

Case Definition

Confirmed Case

Laboratory confirmation of infection with clinically compatible signs and symptoms:

- Isolation of cholera toxin producing *Vibrio cholerae* (*V. cholerae*) serovar O1 or O139 from an appropriate clinical specimen (i.e., stool).

Probable Case

- Clinically compatible signs and symptoms in a person with an epidemiologic link to a laboratory-confirmed case.

OR

- Detection of *V. cholerae* by nucleic acid amplification testing (NAAT) from an appropriate clinical specimen (see above).

Outbreak Case Definition

The outbreak case definition varies with the outbreak under investigation. Please refer to the *Infectious Diseases Protocol, 2018* (or as current) for guidance in developing an outbreak case definition as needed.

The outbreak case definitions are established to reflect the disease and circumstances of the outbreak under investigation. The outbreak case definitions should be developed for each individual outbreak based on its characteristics, reviewed during the course of the outbreak, and modified if necessary, to ensure that the majority of cases are captured by the definition. The case definitions should be created in consideration of the outbreak definitions.

Outbreak cases may be classified by levels of probability (*i.e.*, confirmed and/or probable).

Clinical Information

Clinical Evidence

Clinically compatible signs and symptoms of illness are characterized by mild or moderate diarrhea in roughly 90% of individuals. In 5-10% of cases, infected individuals develop severe, watery diarrhea and/or vomiting. Stools are typically colourless with flecks of mucous referred to as "rice water" diarrhea. The resulting loss of fluids in an infected individual can rapidly lead to severe dehydration. If not treated, death can occur within hours.

Clinical Presentation

Most persons infected with *V. cholerae* are asymptomatic although the bacterium can be shed in their feces for 7-14 days.² When illness does occur, infection causes only mild or moderate diarrhea in roughly 90% of individuals. In 5-10% of cases, infected individuals develop severe, watery diarrhea and vomiting.³ Stools are typically white-tinged with flecks of mucous referred to as "rice water" diarrhea.¹ The resulting loss of fluids in an infected individual can rapidly lead to severe dehydration. If not treated, death can occur within hours.⁴

Laboratory Evidence

Laboratory Confirmation

The following will constitute a confirmed case

- Positive culture for toxigenic *V. cholerae*

Approved/Validated Tests

- Standard culture for *V. cholerae*
- NAAT for *V. cholerae*
- Serotyping for O antigen

Indications and Limitations

- Toxigenicity of *V. cholerae* isolates should be established.
- Further strain characterization, including antibiotic susceptibility testing, is indicated for epidemiological, public health and control purposes.

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

Case Management

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:

- Inquire about cholera vaccination history.

Provide education about the illness and how to prevent the spread of infection as above.

Exclude symptomatic food handlers, healthcare providers, and day care staff and attendees until symptom free for 24 hours, or 48 hours after completion of antibiotic or anti-diarrheal medications.

Note: Treatment is under the direction of the attending health care provider.

Contact Management

Meal companions in the five days before onset should be assessed for symptoms and advised to seek medical care if indicated.²

Chemoprophylaxis of contacts currently is not recommended by the WHO, except in special circumstances in which the probability of fecal exposure is high and medication can be delivered rapidly.¹

* If the healthcare setting is a hospital, use the [“Enteric Diseases Surveillance Protocol for Ontario Hospitals”](#) (OHA and OMA Joint Communicable Diseases Surveillance Protocols Committee [2017, or as current]) for exclusion criteria.

Management of symptomatic contacts is the same as for cases.

Outbreak management

Please see the *Infectious Diseases Protocol, 2018* (or as current) for the public health management of outbreaks or clusters in order to identify the source of illness, manage the outbreak and limit secondary spread.

Two or more non-travel cases linked by time, common exposure, and/or place is suggestive of an outbreak.

For more information regarding specimen collection and testing, please see the [Public Health Inspector's Guide to Environmental Microbiology Laboratory Testing](#), (2021 or as current).⁶

Refer to [Ontario's Foodborne Illness Outbreak Response Protocol \(ON-FIORP\) 2020](#) for multi-jurisdictional foodborne outbreaks which require the response of more than two Partners (as defined in ON-FIORP) to carry out an investigation.

Prevention and Control Measures

Personal Prevention Measures

Traveler education:

- Consult with a travel clinic regarding occurrence of cholera and vaccination recommendations. A number of safe and effective vaccines for cholera are available.
- Stress food and water precautions while travelling in endemic areas.
- Avoid eating raw oysters and undercooked shellfish and fish.
- Disseminate general public health education messages about hand hygiene and food safety.

Infection Prevention and Control Strategies

Preventative strategies:

- Use routine practices and additional precautions for hospitalized cases, including contact precautions for diapered or incontinent persons for the duration of illness.¹
- When possible, hospitalized individuals with diarrhea possibly due to cholera should not share toilet facilities with other patients.
- Refer to [PHO's website](#) to search for the most up-to-date information on Infection Prevention and Control (IPAC).

Disease Characteristics

Aetiologic Agent - Cholera is caused by toxigenic strains of *Vibrio cholerae* (*V. cholerae*), which is a gram-negative, curved rod that is motile and has many serogroups.¹ Only the toxin producing serogroups O1, O139 cause epidemics.² However, non-toxigenic serotypes such as O141 can cause sporadic illness.¹

Modes of Transmission - Cholera is one of the oldest and best understood epidemic diseases. Epidemics and pandemics are strongly linked to the consumption of fecally contaminated water.²

Transmission occurs through the ingestion of food or water contaminated with feces or vomitus of cases or carriers; consumption of raw or improperly cooked seafood, and other foods harvested from estuarine water or seawater.²

Incubation Period – From a few hours to 5 days, usually 2-3 days.²

Period of Communicability - For the duration of the stool-positive stage, usually until 2-3 days after recovery for symptomatic individuals, however, carrier state may persist for months. Asymptomatic individuals can shed the bacterium in their feces for 7-14 days. Appropriate antibiotics can shorten the period of communicability, but are not recommended for treatment.²

Reservoir - Humans are the only documented natural hosts, but living *V. cholerae* organisms can exist in contaminated aquatic environments.¹ The bacterium has been found to exist in environmental reservoirs such as small crustaceans.

Host Susceptibility and Resistance - Susceptibility is variable; gastric achlorhydria and the lack of immunity seen in small children may increase the risk of illness. Breastfed infants are at reduced risk of cholera. Cholera occurs more often in persons with blood type O.²

In endemic areas, most people acquire antibodies by early adulthood. Infection with O1 serotype affords no protection against serotype O139 infection and vice versa. Previous exposure does not confer immunity against future infection.²

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.

References

1. Committee on Infectious Diseases, American Academy of Pediatrics. Section 3: Summaries of Infectious Diseases: Vibrio Infections, Cholera. 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.
2. Heymann DL, editor. Control of Communicable Diseases Manual. 20 ed. Washington, D.C: American Public Health Association; 2015.
3. Centers for Disease Control and Prevention. Cholera - Vibrio cholerae infection: Illness & Symptoms [Internet]. Atlanta, GA: U.S. Department of Health & Human Services 2014 [updated October 3, 2014; cited June 14, 2018]. Available from: <https://www.cdc.gov/cholera/illness.html>
4. Government of Canada. Cholera [Internet]. Ottawa, ON: Her Majesty the Queen in Right of Canada; 2017 [updated August 17, 2017; cited June 5, 2018]. Available from: <https://travel.gc.ca/travelling/health-safety/diseases/cholera>
5. Health Protection and Promotion Act, R.S.O. 1990, Reg. 569, Reports, (2018). Available from: <https://www.ontario.ca/laws/regulation/900569>
6. Ontario Agency for Health Protection and Promotion (Public Health Ontario). Public Health Inspector's Guide to Environmental Microbiology Laboratory Testing. Evergreen ed. Toronto, ON: Queen's Printer for Ontario; 2021.

Case Definition Sources

Centers for Disease Control and Prevention. National Notifiable Disease Surveillance System: Cholera (*Vibrio cholerae* O1/O139) - 1996 Case Definition [Internet]. Atlanta, GA: U.S. Department of Health & Human Services; 1996 [cited June 5, 2018].

Available from: [Cholera \(*Vibrio cholerae* O1/O139\) 1996 Case Definition | CDC](#)

Heymann DL, editor. Control of Communicable Diseases Manual. 20 ed. Washington, D.C: American Public Health Association; 2015.

Ontario Agency for Health Protection and Promotion (Public Health Ontario). Cholera: Information for Clinicians, December 1, 2010. Toronto, ON: Queen's Printer for

Ontario; 2010. Available from: <https://www.canada.ca/en/public-health/services/diseases/cholera/professionals/national-case-definition.html>

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

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.