

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

Infectious Disease Protocol

Appendix 1:

Case Definitions and Disease-Specific Information

Disease: Giardiasis

Effective: August 2023

Giardiasis

Communicable

Virulent

[Health Protection and Promotion Act \(HPPA\)](#)¹

[Ontario Regulation \(O. Reg.\) 135/18 \(Designation of Diseases\)](#)²

Provincial Reporting Requirements

Confirmed case

Probable case

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

- [O. Reg. 569](#) (Reports) under the HPPA;⁴
- 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, from an appropriate clinical specimen (e.g., stool, duodenal fluid, small bowel biopsy):

- Demonstration of *Giardia lamblia* (*G. lamblia*) cysts or trophozoites

OR

- Demonstration of *G. lamblia* antigen by an approved method (e.g., enzyme immunoassay [EIA], immunochromatographic test [ICT]).

OR

- Detection of *Giardia* deoxyribonucleic acid (DNA) in stool.

Note: As listed under [Ontario Regulation 135/18](#), asymptomatic cases are not reportable.²

Probable Case

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

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.³

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 are characterized by subacute to chronic diarrhea, pale greasy stool (steatorrhea), abdominal cramps, bloating, nausea, weight loss, fatigue, malabsorption of fats, acquired lactose intolerance, and micronutrient deficiencies (e.g., vitamin A, B12, folate).

Clinical Presentation

Symptoms may include subacute self-limiting diarrhea or chronic steatorrhea, abdominal cramps, bloating, frequent loose and pale greasy stools, fatigue, and weight loss. There is usually no extra-intestinal invasion, but reactive arthritis and, in severe cases, damage to the small intestine or the biliary duct may rarely occur. Persons may also be asymptomatic.⁵

Laboratory Evidence

Laboratory Confirmation

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

- Detection of *G. duodenalis* (syn. *G. intestinalis*, *G. lamblia*) cysts or trophozoites by microscopic examination from a gastrointestinal tract specimen (e.g., stool, rectal swab, intestinal fluid, small bowel biopsy).
- Detection of *G. duodenalis* (syn. *G. intestinalis*, *G. lamblia*) antigens by enzyme immunoassay (EIA), direct immunofluorescence assay (DFA), or immunochromatographic testing (ICT) from a gastrointestinal tract specimen.
- Detection of *G. duodenalis* (syn. *G. intestinalis*, *G. lamblia*) nucleic acids by molecular methods (e.g., polymerase chain reaction) from a gastrointestinal tract specimen.

Supportive Laboratory Evidence of Infection

Not applicable.

Indications and Limitations

- If giardiasis is strongly suspected, multiple stool specimens (up to three) should be collected every other day until a diagnosis is made due to the intermittent shedding of the organism and the limited sensitivity of a single stool specimen.
- Microscopic examination should ideally be performed on preserved

specimens, otherwise *Giardia* trophozoites start to degrade and become undetectable within minutes of collection in unpreserved specimens leading to false negative results.

- Antigen or molecular examination should ideally be performed on unpreserved specimens, otherwise most preservatives (e.g., sodium acetate, acetic acid, and formalin [SAFI]) interfere with antigenic or molecular detection leading to false negative results.

For further information about human diagnostic testing, contact PHO's laboratory Services at: <https://www.publichealthontario.ca/en/Laboratory-Services/Laboratory-Contact>.

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.³ 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 the incubation period:

- History of out-of-province or international travel including earliest and latest exposure dates;
- History of exposure to known sources of *Giardia*;
- Residency/attendance or employment at a facility or institution.

People with diarrhea caused by *Giardia* species should not use recreational water venues such as swimming pools, lakes, and rivers while symptomatic. Children who had diarrhea attributable to *Giardia* and who are incontinent should avoid recreational water activities for 1 week after symptoms resolve.⁶

Provide education about the illness, proper hand hygiene, proper food handling and

how to prevent the spread of infection as above.

Exclusion Criteria:

- Exclude symptomatic food handlers, healthcare providers, and daycare staff and attendees until symptom free for 24 hours, OR symptom free for 48 hours after discontinuing use of anti-diarrheal medication.
- 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.⁷

The rationale for exclusion for 48 hours after discontinuing the use of anti-diarrheal medication is to ensure that diarrhea does not return after the anti-diarrheal medication has been discontinued. In the event that antibiotics are used, the person should be excluded until symptom free for 24 hours.

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

Contact Management

Household members and other suspected contacts should be assessed for symptoms and if symptomatic should be advised to seek medical care. Provide information about the spread of infection and how to prevent it. 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.³

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

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

investigation.⁸

Prevention and Control Measures

Personal Prevention Measures

Prevention Measures:

- Education of families and personnel of day care centres on personal hygienic practices, such as hand washing before meals, after toilet use and changing diapers.⁶
- Where water might be contaminated, travelers, campers, and hikers should be advised of methods to ensure the water is safe for drinking, including boiling, chemical disinfection, and filtration.⁶
- Waterborne disease can be prevented by combination of adequate filtration of water from surface water sources (e.g., lakes, rivers, and streams), chlorination, and maintenance of water distribution systems including private water supplies.⁶
- Regular testing of private water supplies is advisable.

Infection Prevention and Control Strategies

Routine practices are recommended for hospitalized cases.

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

Disease Characteristics

Aetiologic Agent - Giardiasis is caused by a flagellate protozoan *Giardia duodenalis* (also known as *G. intestinalis* or *Giardia lamblia*).⁵ The organism is found in either a trophozoite form or a cyst form. The trophozoite is relatively fragile and dies when excreted from the body. The cyst, which is environmentally hardy, is the infective form.⁶

Modes of Transmission - Person-to-person transmission occurs by hand-to-mouth

transfer of cysts from the feces of an infected individual, especially in institutions and day care settings; this is probably the principal mode of spread. Anal-oral sexual contact also facilitates transmission.⁵

Localized outbreaks have been documented from ingestion of cysts in fecally-contaminated drinking and recreational water more often than from fecally-contaminated food. Concentrations of chlorine used in routine water treatment do not kill *Giardia* cysts, especially when the water is cold; unfiltered stream and lake waters open to contamination by human and animal feces are a source of infection.⁵

Incubation Period – Usually 3 – 25 days or longer; median 7 – 10 days.⁵

Period of Communicability - Duration of cyst excretion is variable but can range from weeks to months. Giardiasis is communicable for as long as the infected person excretes cysts.^{5,6}

Reservoir - Humans are the principal reservoir of infection, but *Giardia* organisms can infect dogs, cats, beavers, cattle, nonhuman primates, and other animals.^{5,6}

Host Susceptibility and Resistance - Asymptomatic carrier rate is high; infection is frequently self-limited. Immunocompromised persons and individuals with HIV infection may be at risk of more serious and prolonged disease.⁵

Please refer to [PHO's Infectious Disease Trends in Ontario \(IDTO\) interactive tool](#) for the most up-to-date information on infectious disease trends in Ontario.⁹

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

References

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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.
December 2022	Case Definition	Revised to reflect O. Reg. 135/18 section on Giardiasis- asymptomatic cases are not reportable.
August 2023	Clinical Information	Technical updates to clinical evidence and clinical presentation.
August 2023	Laboratory Evidence	Technical updates and rewording to laboratory confirmation, supportive laboratory evidence of infection and indications and limitations.
August 2023	Disease Characteristics	Technical updates to aetiological agent, modes of transmission and host susceptibility and resistance.