Prince Edward Island
CANADA

Health and Wellness

# Prince Edward Island Guidelines for the Management and Control of Giardiasis

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Department of Health and Wellness
Chief Public Health Office

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# Case Definition1

### Confirmed Case

Laboratory confirmation of infection with or without clinical illness*, from stool, duodenal fluid or small bowel biopsy specimen:

- Demonstration of Giardia lamblia

### Probable Case

Clinical illness* in a person who is epidemiologically linked to a confirmed case.

*Clinical illness is characterized by diarrhea, abdominal pain, malaise, fever, nausea, and /or vomiting

# Reporting Requirements

### Laboratories

The Provincial Laboratory shall in accordance with the Prince Edward Island *Public Health Act*[2], report all positive laboratory results by phone and mail, fax or electronic transfer as soon as the result is known to the Chief Public Health Officer (CPHO) (or designate).

# Etiology

*Giardia lamblia* is a flagellate protozoan that infects the biliary tract and upper small intestine. It exists in trophozoite (free-living stage) and cyst forms. The cyst is the infective form and is sporadically excreted in feces. *Giardia* cysts survive well in the environment, particularly in cold water; boiling for a minimum of one minute may inactivate them.

# Clinical Presentation

Giardiasis is often asymptomatic. Symptomatic individuals may suffer a broad spectrum of manifestations including the acute onset of intermittent acute watery diarrhea, steatorrhea, abdominal cramps and distension, flatulence, and anorexia. Periods of diarrhea may alternate with constipation until the individual has been treated or the symptoms resolve spontaneously. Vomiting, fever, and tenesmus occur less commonly. One of the most distinguishing features of illness is the prolonged duration of diarrhea. As the disease progresses the stool becomes greasy, foul smelling, and may float. The malabsorption of fats and fat-soluble vitamins can occur with prolonged illness. Weight loss is common.
The infection is often self-limited lasting a few weeks to months. Most persons with giardiasis have a relatively benign course of infection; however, some individuals, in particular children

younger than five years of age and pregnant women, may have severe illness characterized by weight loss and require hospitalization.

## Diagnosis

Giardiasis should be considered in persons with prolonged diarrhea especially when associated with malabsorption or weight loss. The diagnosis is most often made by examination of stool for ova and parasites, looking for trophozoites or cysts or by serology EIA. Serology is referred to the National Centre for Parasitology in Montreal by the Provincial Lab. Diagnosis may be made by the identification of cysts or trophozoites in feces or trophozoites in duodenal fluid or mucosa obtained by small intestine biopsy. This method may be helpful in those cases that are particularly difficult to diagnose.

## Epidemiology[3]

1. **Reservoir**
   Humans are the principal reservoir of *Giardia lamblia.* Domestic and wild animals including beavers and other wild and domestic animals have been identified as potential reservoirs. Water sources that have become contaminated by human and animal feces are a common source of infection. Contaminated food may also be a source.
2. **Transmission**
   The transmission of *Giardia* most commonly occurs through the consumption of contaminated water and occasionally from swimming in contaminated water sources. Surface water can easily become contaminated by the feces of human or animal sources. Routine water treatment does not kill *Giardia* cysts. Filtration is necessary.

   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 centers; this is probably the principle mode of spread. Anal intercourse also facilitates transmission. Foodborne transmission has also been documented. The infectious dose is generally less than 10 cysts and may be as low as one cyst.
3. **Incubation Period**
   Typically, the incubation period is 3 days to 25 days with average of 7 to 10 days.

   The time from ingestion of cysts to detection of cysts in the stool may be longer than the incubation period, thus stool examination at the time of onset of symptoms may be negative.

4. **Period of Communicability**
   Giardiasis is communicable during the entire period of infection (as long as a person excretes the cysts), which may last months. About 50% of adults clear the infection spontaneously in one to three months. Five to 15% of individuals become asymptomatic cyst carriers.
5. **Host susceptibility**
   Persons with immunodeficiencies (e.g., HIV or AIDS) can experience a more serious and prolonged illness.

## Occurrence

1. **General**
   *Giardia lamblia* is one of the most common causes of endemic and epidemic diarrhea throughout the world. Prevalence is highest in areas of poor sanitation and in facilities where children are not toilet trained. Waterborne outbreaks have occurred in communities that derive water from sources without a filtration system. Persons travelling overseas or hikers in wilderness areas may be at risk for giardiasis.

   Infection with *Giardia* is most frequently reported in children from newborn up to five years of age and in adults aged 31 to 40 years. It is most often reported during the late summer and fall months.
2. **Canada**
   The most prevalent enteric parasite in Canada, *Giardia lamblia* is the most frequent cause of non-bacterial diarrhea. The number of cases reported has gradually declined.
3. **Prince Edward Island**
   In PEI the number of giardia cases fluctuates but usually ranges between 5-15 cases per year.

## Control

1. **Management of a case**
   - All cases should be instructed about disease transmission, appropriate personal hygiene, routine practices, and contact precautions.
   - Exclusion should be considered for symptomatic and asymptomatic cases who are:
     - food handlers whose work involves
       - touching unwrapped food to be consumed raw or without further cooking and/or
       - handling equipment or utensils that touch unwrapped food to be consumed raw or without further cooking,

  - healthcare, daycare or other staff who have contact through serving food with highly susceptible patients or persons, in whom an intestinal infection would have particularly serious consequences,
  - involved in patient care or care of young children, elderly or dependent persons,
  - children attending daycares or similar facilities who are diapered or unable to implement good standards of personal hygiene, and
  - older children or adults who are unable to implement good standards of personal hygiene (e.g., mentally or physically challenged).
- Exclusion applies to symptomatic cases until 48 hrs after diarrhea has resolved.
- Reassignment to a low risk area may be used as an alternative to exclusion.
- Contact precautions should be used in healthcare settings where children or adults have poor hygiene or incontinence which cannot be contained. Otherwise, routine practices are adequate.
- Public Health Nursing, Health PEI, will follow up all confirmed cases and environmental health officers may be consulted on cases as appropriate.

**2. Treatment of a case**

- Symptomatic cases should be treated.
- Antibiotics
  - Adults: Metronidazole for five to seven days.
  - Children: Metronidazole for seven days.
  - Pregnant Women: Paromycine for five to 10 days; or if unsuccessful, metronidazole if beyond the first trimester. Consultation with an infectious diseases physician is recommended.
- Alternative Treatment: Albendazole may provide some benefit. Albendazole is available through the Public Health Agency of Canada Special Access Program (SAP). The SAP form is available at: http://www.hc-sc.gc.ca/dhp-mps/acces/drugs-drogues/index-eng.php
- Treatment of asymptomatic carriers is generally not recommended.

**3. Management of contacts**

- Contacts should be instructed in disease transmission, appropriate personal hygiene, routine practices, and contact precautions.
- Symptomatic contacts should be assessed by a physician.
- All identified infections should be treated at the same time as the case.
- Contacts who are symptomatic may be excluded from daycare or similar facilities or occupations involving food handling, patient care or care of young, elderly or dependent persons as per CPHO assessment.
- Asymptomatic contacts, in general, are not excluded from work or daycare.

**4. Preventative measures**

- Educate campers, backpackers, and others to avoid drinking water directly from streams. Water should be boiled for at least one minute before it is used for drinking, food preparation, and oral hygiene.
- Provide public education about personal hygiene, especially the sanitary disposal of feces and careful hand washing after defecation and sexual contact, and before preparing or eating food.
- Educate food handlers about proper food and equipment handling and hygiene, and thorough hand washing.
- Advise infected individuals to avoid food preparation.
- Educate about the risk of sexual practices that permit fecal-oral contact.
- Test private water supplies for presence of contamination, if suspected.
- Advise individuals to avoid using public swimming pools when feces cannot be contained or when experiencing diarrhea. Water contained in public swimming areas can be a vehicle for the human-to-human transmission of enteric pathogens.
- Educate regarding good personal hygiene, especially hand washing for staff and children in institutions and daycares.

## References

1. **Canada, Public Health Agency of. 2009.** Case Definitions for Communicable Diseases. *Public Health Agency of Canada.* [Online] November 2009.

2. Province of PEI. Public Health Act R.S.P.E.I [Internet]. 2013. Available from: http://www.gov.pe.ca/law/statutes/pdf/p-30_1.pdf

3. Heymann, David L. 2015. *Control of Comminicable Diseases Manual 20th Edition.* Washington : American Public Health Association, 2015.