

Giardiasis

Revision Dates

Case Definition	August 2011
Reporting Requirements	August 2011
Remainder of the Guideline (i.e., Etiology to References sections inclusive)	October 2005

Case Definition

Confirmed Case

Laboratory confirmation of infection with or without clinical illness^[1]:

- Detection of *Giardia lamblia* in stool, duodenal fluid or small bowel biopsy specimen

OR

- Detection of *Giardia lamblia* antigen in stool by a specific immunodiagnostic test (e.g., EIA).

Probable Case

Clinical illness^[1] in a person who is epidemiologically linked to a confirmed case.

^[1] Clinical illness is characterized by diarrhea, abdominal cramps, bloating, weight loss, fatigue or malabsorption.

Reporting Requirements

1. Physicians, Health Practitioners and others

Physicians, health practitioners and others listed in Sections 22(1) or 22(2) of the *Public Health Act* shall notify the Medical Officer of Health (MOH) (or designate) of all confirmed and probable cases in the prescribed form by mail, fax or electronic transfer within 48 hours (two days).

2. Laboratories

All laboratories, including regional laboratories and the Provincial Laboratory for Public Health (PLPH) shall in accordance with Section 23 of the *Public Health Act*, report all positive laboratory results by mail, fax or electronic transfer within 48 hours (two days) to the:

- Chief Medical Officer of Health (CMOH) (or designate),
- MOH (or designate) and
- Attending/ordering physician.

3. Alberta Health Services and First Nations Inuit Health

- The MOH (or designate) of the zone where the case currently resides shall forward the preliminary Notifiable Disease Report (NDR) of all confirmed and probable cases to the CMOH (or designate) within two weeks of notification and the final NDR (amendment) within four weeks of notification.
- For out-of-zone reports, the MOH (or designate) first notified shall notify the MOH (or designate) of the zone where the client currently resides by mail, fax or electronic transfer and fax a copy of the positive laboratory report within 48 hours (two days).
- For out-of-province and out-of-country reports, the following information should be forwarded to the CMOH (or designate) by phone, fax or electronic transfer within 48 hours (two days) including:
 - name,
 - date of birth,
 - out-of-province health care number,
 - out-of-province address and phone number,
 - attending physician (locally and out-of-province) and
 - positive laboratory report (faxed).

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.(1)

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 distention, 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 PLPH. 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

Reservoir

Humans are the principal reservoir of *Giardia lamblia*. Domestic and wild animals including beavers and bears 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.

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 is the second most common mode of spread. This is frequently associated with groups who demonstrate poor fecal-oral hygiene such as in daycare settings, MSM, and institutions. Foodborne transmission has also been documented. The infectious dose is generally less than 10 cysts and may be as low as one cyst.(1)

Incubation Period

Typically, the incubation period is one to four weeks with average of seven to 10 days.

After the ingestion of cysts, there is an incubation period of one to two weeks before the onset of symptoms. 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.

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 passers.

Host Susceptibility

Persons with immunodeficiencies (e.g., HIV or AIDS) can experience a more serious and prolonged illness.

Occurrence

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.

Giardia is the most commonly identified intestinal parasite in the US and is identified in 4 to 7% of all stool specimens. Approximately 28,000 cases are reported annually. Because of under reporting it has been estimated that there are 100,000 to 2.5 million cases annually.

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.

Canada

The most prevalent enteric parasite in Canada, *Giardia lamblia* is the most frequent cause of non-bacterial diarrhea. From 1992 to 2000, the number of cases reported has gradually declined from approximately 7500 to 5000. Rates are highest in young children. Infection occurs most commonly in July and August.

Alberta (2)

From 1996 to 2004 the number of cases of giardiasis cases reported in Alberta has been fewer than 610 cases per year. In 2004, 491 cases (15.4/100,000) were reported. Generally, the highest rates occurred in southern Alberta and along the western border. Disease is most prevalent in young children and adults 25 to 59 years of age. Outbreaks of *Giardia* have occurred.

Key Investigation

Single Case/Household Cluster

- Determine the possible source of infection taking into consideration the incubation period, reservoir, and mode of transmission. Assessment may include:
 - determining history of travel, wilderness hiking or camping,
 - obtaining a food history,
 - determining history of high risk sexual practices especially contact with feces, and

- identifying attendance at daycare/dayhome or other type of institutional contact (e.g., continuing care facility).
- Investigate for possible contamination of well or water supply.
- Identify history of residing in areas with poor sanitation including improper water treatment and sewage disposal and include recent immigration.
- Assess for similar symptoms in other members of the household (historical or present).
- Identify contacts. Contacts include:
 - persons living in the household,
 - children and childcare workers in a daycare/dayhome, and
 - individuals exposed to the same source (if it is identified).

Control

- 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 and asymptomatic cases until 48 hours after treatment with appropriate antibiotics has been completed and two stool specimens or cultures taken from the infected person not less than 24 hours apart and at least 48 hours after normal stools have resumed are reported as negative.
- 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.

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-droques/index-eng.php>
- Treatment of asymptomatic carriers is generally not recommended.

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 MOH assessment.
- Two stool specimens or cultures may be requested from symptomatic contacts not less than 24 hours apart. Specimens must be reported as negative prior to returning to daycare or similar facilities or occupations involving food handling, patient care or care of young, elderly or dependent persons.
- Asymptomatic contacts, in general, are not excluded from work or daycare.

Preventive Measures

- 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, especially in avoiding cross-contamination from raw meat products, and thorough hand washing.
- Advise infected individuals to avoid food preparation.
- Educate about the risk of sexual practices that permit fecal-oral contact.
 - Educate about condom use for safer sex.
- 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.
- 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.

References

- (1) Public Health Agency of Canada. *Infectious substances: Giardia lamblia*. Office of Laboratory Security. Material Safety Data Sheet. January 2001.
<http://www.phac-aspc.gc.ca/msds-ftss/index.html>
- (2) Alberta Health and Wellness, Disease Control and Prevention. *Notifiable Disease – Alberta*. Communicable Disease Reporting System Mid Year Population. March 2003.

Superseded