

Giardiasis



Case Definition

Demonstration of *Giardia lamblia* trophozoites or cysts in stool or duodenal specimens.

Reporting Requirements

- All positive laboratory tests are reportable by laboratory.
- All cases are reportable by attending health care professional.

Clinical Presentation/Natural History

Often asymptomatic. Symptomatic persons may experience protracted intermittent diarrhea (pale greasy stools) alternating with constipation, bloating and abdominal discomfort. Prolonged illness may be associated with malabsorption of fats and vitamins. Reactive arthritis may occur.

Etiology

Giardia lamblia, a flagellate protozoan which inhabits the upper small intestine. The trophozoite is the intra-intestinal form; the cyst is the infectious form that is excreted in stool.

Epidemiology

Reservoir and Source: Humans are the main reservoir; also domestic animals and possibly beavers and other wild animals. Common sources include infected humans and unfiltered surface water sources that are open to contamination by human and animal feces. Fecally contaminated food is a less common source of infection. Concentrations of chlorine used in routine water treatment do not kill *Giardia* cysts, especially when the water is cold.

Transmission: Fecal-oral. Person-to-person spread (hand-to-mouth transfer of fecal cysts, especially in institutions and day care centres) is probably the

principal mode of spread. Localized outbreaks may occur from ingestion of contaminated water or food, and cases may also occur from swimming in contaminated water.

Occurrence

General: Worldwide. Most cases are sporadic and prevalence is higher in areas with poor sanitation. Waterborne outbreaks have occurred in communities that derive water from streams or rivers without a water filtration system. Outbreaks have also occurred in day-care centres that serve children who are not toilet trained. Endemic infections in Canada, the United States, United Kingdom and Mexico most commonly occur in July to October, and among children less than five years of age and adults 25 to 39 years old.

Manitoba: Reporting was initiated in September 1997. Since then, 540 cases have been identified (to July 2000).

Incubation Period: Usually one to four weeks, median seven to 10 days.

Susceptibility and Resistance: Asymptomatic carrier rates are high; infection is frequently self-limited. Persons with AIDS may have more serious and prolonged infections.

Period of Communicability: One or more weeks before the onset of symptoms and as long as the person excretes cysts. About 50% of adults clear the infection spontaneously in one to three months.

Diagnosis

Observation of *Giardia lamblia* organisms in stool or trophozoites in duodenal contents. Because *Giardia* infection is usually asymptomatic, the presence of *G. lamblia* does not necessarily indicate that it is the cause of illness. Tests for detection of antigen in the stool have recently become available in Manitoba, but are not used routinely.

Key Investigations

- **Single case/household cluster**
Investigate for day care or other institutional contact, history of hiking/camping in wilderness areas, history of travel, and possible contamination of family well or community water supply (involve environmental health officer if suspected).
- **Outbreak in area or institution**
Conduct epidemiologic investigation to determine common source of infection/mode of transmission. Involve environmental health/public health inspectors. Take environmental samples. Look for potential sources in drinking water (especially surface water), connection with institutions or daycare centres, contaminated food, or swimming in contaminated water.

Control

Management of Cases:

- Contact precautions should be used for hospitalized children and for hospitalized adults who have poor hygiene or incontinence which cannot be contained. Otherwise, routine infection control precautions are adequate.
- Exclude symptomatic persons from foodhandling, care of hospitalized patients, and from personal care homes and day-care centres until diarrhea is resolved.
- Exclusion of asymptomatic infected persons is only indicated for those with questionable personal hygiene.
- Emphasize proper handwashing.
- Education should be provided regarding personal and food hygiene.
- In communities with a modern sewage disposal system, feces can be discharged directly into sewers without preliminary disinfection.

Treatment:

- The preferred drug is metronidazole, adult dose 250 mg tid for seven days, children dose 15-25 mg/kg/day divided into three doses for seven days.

- Test of cure at two to three weeks after initiation of treatment is recommended.
- As metronidazole is contraindicated in the first trimester of pregnancy, an infectious disease consultation is recommended.
- Alternative drugs to metronidazole, such as quinacrine hydrochloride, are available only on Health Canada special release; infectious disease consultation is again recommended.

Management of Contacts:

- Symptomatic contacts should seek medical attention and should have stool cultures taken.
- Screening of asymptomatic contacts is not generally recommended. Screen and treat asymptomatic contacts in family settings with recurrent or multiple infections.
- Microscopic examination of stool specimens of household members and other suspected contacts who are symptomatic is recommended. All identified infections should be treated at the same time.
- Asymptomatic contacts do not require exclusion from work or day care.

Management of Outbreaks:

- Investigate for a common source and manage accordingly.
- In institutional settings with recurrent or multiple outbreaks, screening for asymptomatic infection with treatment of positive cases may be undertaken.

Preventive Measures:

- Good personal hygiene, especially handwashing by staff and children in institutions and day-care centres.
- Education of campers, backpackers and others to avoid drinking water directly from streams. Boiling kills the organisms. Less reliable disinfection is chemical treatment with hypochlorite or iodine, using 0.1 to 0.2 ml (two to four drops) of household bleach or 0.5 ml of 2% tincture of iodine per litre for 20 minutes (longer if the water is cold or turbid).

Communicable Disease Management Protocol

- Protect wells from contamination with surface water, especially during spring runoff.
- Protect public water supplies against contamination with human and animal feces.
- Filter public drinking water obtained from surface water in areas where *Giardia* infection is known to occur. Chlorination is not effective in killing cysts.
- Sanitary disposal of human and animal feces.