

GIARDIASIS

Responsibilities:

Hospital: Report by IDSS, facsimile, mail or phone

Lab: Report by IDSS, facsimile, mail or phone

Physicians: Report by facsimile, mail or phone

Local Public Health Agency (LPHA): Only clusters of cases warrant specific follow-up

Iowa Department of Public Health

Disease Reporting Hotline: (800) 362-2736

Secure Fax: (515) 281-5698

1) THE DISEASE AND ITS EPIDEMIOLOGY

A. Agent

Giardia lamblia is a protozoan parasite that has two forms: cyst (inactive form) and trophozoite (active form). Infected persons can shed both trophozoites and cysts in stool

B. Clinical Description

Symptoms: of giardiasis are variable, and usually asymptomatic, but can include soft, non-bloody, foul-smelling diarrhea. Abdominal cramps and a “bloated” feeling with excess gas often accompany the diarrhea. The diarrhea can be chronic or intermittent and it can be accompanied by fatigue and steatorrhea (fatty stools). Appetite loss combined with malabsorption can lead to significant weight loss, failure to thrive and anemia.

Onset: is usually abrupt. Diarrhea may occur after meals, is non-bloody and is mucous-like 25% of the time.

Complications: are not common. However diarrhea may last 2 - 6 weeks.

C. Reservoirs

Common reservoirs: Humans and some animals (dogs, cats, rodents, cattle, deer, elk, beaver, and muskrats) are reservoirs, although the public health importance of most nonhuman reservoirs is debated. Overall, humans are the most important source of other human infections. Wildlife such as deer, elk, and beaver may be important in contaminating surface water supplies; domestic animals (*e.g.*, dogs) may be a source for some human exposures. The most common source in Iowa is young children, especially those in child care.

D. Modes of Transmission

Spread: *Giardia* is principally spread person-to-person. Persons become infected by fecal-oral transfer of cysts from the feces of an infected individual, especially in institutions and child care centers. Transmission can also occur person-to-person through certain types of sexual contact (*e.g.*, oral-anal contact). Giardiasis has developed with ingestion with as few as 10 cysts.

Environmental: Localized outbreaks may occur from fecally contaminated water, such as stream and lake waters and swimming pools that are contaminated by human and animal feces. Eating food contaminated by an infected food handler can be a source, but this has been rarely documented. Diapered children using “kiddie” pools filled with tap water without added chlorine or bleach is a high-risk source of transmission.

E. Incubation period

The incubation period can vary from 3 - 25 days (or longer); the median is 7–10 days.

F. Period of Communicability or Infectious Period

The disease is communicable for as long as the infected person excretes the organism, which may be many months. The asymptomatic carrier rate is high.

G. Epidemiology

Giardiasis has a worldwide distribution. Children are infected more frequently than adults. Prevalence is higher in areas of poor sanitation and in institutions with children who are not toilet trained, especially child care centers. It infects nearly 2% of adults and 6% to 8% of children in developed countries worldwide. Nearly 33% of people in developing countries have had giardiasis. In the United States, *Giardia* infection is the most common intestinal parasitic disease affecting humans. Surveys conducted in the United States have demonstrated prevalence rates of *Giardia* in stool specimens that range from 1% to 30%, depending on location and age. Cases occur more commonly in the summer and fall months.

H. Bioterrorism Potential

None.

2) DISEASE REPORTING AND CASE INVESTIGATION

A. Purpose of Surveillance and Reporting

- To assess the magnitude of the disease in different areas and among different risk groups.
- To identify outbreaks as soon as possible.
- To design implement effective control or prevention methods.

B. Laboratory and Healthcare Provider Reporting Requirements

Iowa Administrative Code 641-1.3(139) stipulates that the laboratory and the healthcare provider must report. The preferred method of reporting is by utilizing the Iowa Disease Surveillance System (IDSS). However, if IDSS is not available, the reporting number for IDPH Center for Acute Disease Epidemiology (CADE) is (800) 362-2736; fax number (515) 281-5698, mailing address:

IDPH, CADE
Lucas State Office Building, 5th Floor
321 E. 12th St.
Des Moines, IA 50319-0075

Postage-paid disease reporting forms are available free of charge from the IDPH clearinghouse. Call (319) 398-5133 or visit the website healthclearhouse.drugfreeinfo.org/cart.php?target=category&category_id=295 to request a supply.

Laboratory Testing Services Available

The University of Iowa State Hygienic Laboratory (SHL) provides testing services for ova and parasites including *Giardia* from stool specimens. For additional information, contact the SHL at (319) 335-4500 or visit www.shl.uiowa.edu/.

C. Local Public Health Agency Follow-up Responsibilities

Case Investigation

- a. Case investigation of giardiasis in Iowa residents may be necessary in certain settings where outbreaks are likely to occur (child cares, nursing homes, etc). Follow-up of individual cases is usually not warranted.
- b. Following IDPH notification of an outbreak or cluster of cases, LPHA(s) may be asked to assist in an official investigation. An investigation can be completed by interviewing the case and others who may be able to provide pertinent information. Most of the information required can be obtained from the healthcare provider or the medical record. Use the following guidelines to assist in completing the investigation:
 - 1) Record "giardiasis" as the disease being reported.
 - 2) Record the case's demographic information.
 - 3) Record the date of symptom onset, symptoms, date of diagnosis, and hospitalization information (if applicable).
 - 4) When asking about exposure history (food, travel, activities, etc.), use the incubation period range for giardiasis (3–25 days). Specifically, focus on the period beginning a minimum of 3 days prior to the case's onset date back to no more than 25 days before onset.
 - 5) Ask questions about travel history, contact with children, and outdoor activities to help identify where the case became infected.
 - 6) Ask questions about water supply because giardiasis may be acquired through water consumption.
 - 7) Household/close contact, pet or other animal contact, child care, and food handler questions are designed to examine the case's risk of having acquired the illness from, or potential for transmitting it to, these contacts. Determine whether the case attends or works at a child care facility and/or is a food handler.
- c. Discuss the findings with IDPH or mail (in an envelope marked "Confidential") to IDPH, Center for Acute Disease Epidemiology. The mailing address is:

IDPH, CADE
Lucas State Office Building, 5th Floor
321 E. 12th Street
Des Moines, IA 50319-0075

3) CONTROLLING FURTHER SPREAD

A. Isolation and Quarantine Requirements

Food handlers with giardiasis must be excluded from work until diarrhea has ceased.

B. Protection of Contacts of a Case

None.

C. Managing Special Situations

Child care

Since giardiasis may be transmitted person-to-person through fecal-oral transmission, it is important to carefully follow up on cases of giardiasis in child care settings.

- Children with giardiasis who have diarrhea should be excluded until their diarrhea is gone.
- Children with giardiasis who have no diarrhea and are otherwise not ill may be excluded or can remain in the program if special precautions are taken.

- Since most staff in child-care programs are considered food handlers, those with *Giardia* in their stools who are symptomatic should not be at work until diarrhea has ceased. When returning to work good hand hygiene should be practiced at all times.
- All child care staff and children should practice good hand hygiene at all times.

School

Since giardiasis may be transmitted person-to-person through fecal-oral transmission, it is important to carefully follow up on cases of giardiasis in a school setting. General recommendations include:

- Students or staff with giardiasis who have diarrhea should be excluded until their diarrhea is gone.
- Students or staff with giardiasis, who do not handle food, have no diarrhea and are not otherwise sick, may remain in school if special precautions are taken. Students and staff must practice frequent and thorough handwashing using warm running water, soap, with friction for at least 15 seconds, and thoroughly drying their hands with paper towels or a blow dryer. If symptoms of giardiasis occur the person should be excluded.

Food Handler

Note: A food handler is any person directly preparing or handling food. This can include a patient care or child-care provider. See glossary for a more complete definition.

Since *Giardia* may be transmitted via food, it is important to follow up on outbreaks of *Giardia* in any setting carefully. General recommendations include:

- Food handlers with *Giardia* infection who have diarrhea should be excluded until their diarrhea is gone, (until 24 hours after last bout of diarrhea or until formed stools are occurring).
- Food handlers must practice frequent and thorough handwashing using warm running water and soap, with friction for at least 15 seconds, and thoroughly dry their hands with paper towels or a blow dryer.

Community Residential Programs

Actions taken in response to a case of giardiasis in a community residential program will depend on the type of program and the level of functioning of the residents. In long-term care facilities, residents with giardiasis should be placed on standard (including enteric) precautions until their symptoms subside. Staff members who give direct patient care (*e.g.*, feed patients, give mouth or denture care or give medications) are considered food handlers and are subject to food handler restrictions. In residential facilities for the developmentally disabled, staff and clients with giardiasis must refrain from handling or preparing food for other residents until their diarrhea has subsided.

Reported Incidence Is Higher than Usual or an Outbreak is Suspected

If the number of reported cases of giardiasis in your city or county is higher than usual, or if an outbreak is suspected, investigate to determine the source of infection and mode of transmission. A common vehicle (such as water, food or association with a child care center) should be sought and applicable preventive or control measures should be instituted (*e.g.*, removing an implicated food item from the environment). Control of person-to-person transmission requires special emphasis on personal cleanliness and sanitary disposal of feces. Consult with CADE at (800)-362-2736. CADE can help to determine a course of action to prevent further cases and can perform surveillance for cases in an outbreak that may cross several county lines and therefore be difficult to identify at a local level.

D. Preventive Measures

Environmental Measures

To avoid exposure, recommend that individuals:

- Always wash their hands thoroughly with soap, water, and friction for at least 15 seconds before eating or preparing food, after using the toilet and after changing diapers.
- In child cares, dispose of feces in a sanitary manner.
- When caring for someone with diarrhea, scrub hands with plenty of soap and water after cleaning the bathroom, helping the person use the toilet, or changing diapers, soiled clothes, or soiled sheets.
- When hiking or camping, be aware of the risks of drinking water from streams or lakes. Bringing water to a full, rolling boil is sufficient to kill *Giardia*. Several filters are also available that remove *Giardia* cysts. Additionally, some chemical water treatments are effective against *Giardia*.
- Avoid sexual practices that may involve direct contact with feces. Latex barrier protection should be emphasized as a way to prevent the spread of *Giardia* to case's sexual partners as well as being a way to prevent the exposure to and transmission of other pathogens.

International Travel

Travelers to developing countries should:

- "Boil it, cook it, peel it, or forget it."
- Drink only bottled or boiled water, keeping in mind that bottled carbonated water is safer than uncarbonated water.
- Ask for drinks without ice unless the ice is made from bottled or boiled water. Avoid popsicles and flavored ices that may have been made with contaminated water.
- Eat foods that have been thoroughly cooked and are still hot and steaming.
- Avoid raw vegetables and fruits that cannot be peeled. Vegetables like lettuce are easily contaminated and are very hard to wash well.
- Peel their own raw fruits or vegetables and do not eat the peelings.
- Avoid foods and beverages from street vendors.

Note: For more information regarding international travel, contact the CDC's Traveler's Health Office at (877) 394-8747 or visit: www.cdc.gov/travel.

4) ADDITIONAL INFORMATION

The Council of State and Territorial Epidemiologists (CSTE) surveillance case definitions for Giardiasis can be found at: www.cdc.gov/osels/ph_surveillance/nndss/phs/infdis.htm#top

CSTE case definitions should not affect the investigation or reporting of a case that fulfills the criteria in this chapter. (CSTE case definitions are used by the state health department and the CDC to maintain uniform standards for national reporting.)

References

- American Academy of Pediatrics. *2006 Red Book: Report of the Committee on Infectious Diseases, 27th Edition*. Illinois, American Academy of Pediatrics, 2006.
- CDC Website. Giardiasis www.cdc.gov/parasites/giardia/epi.html
- Heymann, D. L. ed. *Control of Communicable Diseases Manual, 20th Edition*. Washington, DC, American Public Health Association, 2015.
- State Hygienic Laboratory, www.shl.uiowa.edu/