Giardiasis

1. DISEASE REPORTING

A. Purpose of Reporting and Surveillance

1. To identify outbreaks and potential sources of ongoing transmission.
2. To prevent further transmission from such sources.

B. Legal Reporting Requirements

1. Health care providers: notifiable to local health jurisdiction within 3 business days.
2. Health care facilities: notifiable to local health jurisdiction within 3 business days.
3. Laboratories: *Giardia lamblia* notifiable to local health jurisdiction within 2 business days. Specimen submission is on request only.
4. Local health jurisdictions: notifiable to Washington State Department of Health (DOH) Office of Communicable Disease Epidemiology (CDE) within 7 days of case investigation completion or summary information required within 21 days.

C. Local Health Jurisdiction Investigative Responsibilities

1. Collect basic information about all cases, including demographic data and hospitalization/death status.
2. Monitor cases reports for outbreaks and investigate outbreaks.

*Note: Due to limited public health resources, investigating and educating individual cases are considered optional activities.*

2. THE DISEASE AND ITS EPIDEMIOLOGY

A. Etiologic Agent

*Giardia intestinalis (G. lamblia, G. duodenalis)*, a protozoan parasite. *Giardia* has two life cycle stages: cyst and trophozoite (free living stage). The relatively hardy cyst is the infectious form; it can remain viable in the environment for weeks or even months. After ingestion, cysts develop in the upper small intestine into trophozoites, which are the motile, feeding, reproducing, and symptom-causing form of the parasite. Infected persons shed trophozoites or cysts (or both) in stool; however, trophozoites do not survive in the environment. Cysts can be killed by boiling, filtration, or disinfection.

B. Description of Illness

Symptoms are variable, but typically include diarrhea, abdominal cramps, bloating, and flatulence that may persist for weeks and can be intermittent or chronic. As the illness progresses and fat absorption is impaired, stools can develop a higher than usual fat content (steatorrhea). Symptoms may be more severe in persons who are...
immunocompromised (e.g., chemotherapy, AIDS). Asymptomatic infections are common.

C. Giardiasis in Washington

During recent years, 400 to 600 cases of giardiasis have been reported to Communicable Disease Epidemiology annually. Common exposures reported by Washington residents include international travel and recreational water exposure.

D. Reservoirs

Humans and some animals are hosts for this parasite. Overall, humans are the most important source of other human infections. Many animals other than humans have been found to be infected, although the importance of most non-human reservoirs is unclear. Cattle, beaver, and other wildlife may be important in contaminating surface water supplies; domestic animals (e.g., dogs) may be a source for some human exposures.

E. Modes of Transmission

Transmission is fecal-oral. Examples include:

1. Contact with infected persons (i.e., those in the same household or child care);
2. Drinking fecally contaminated and inadequately treated water;
3. Ingesting fecally contaminated recreational water (rivers, lakes, etc.);
4. Eating food contaminated by animals or food handlers (rarely documented); and
5. Certain types of sexual contact (e.g., oral-anal contact).

F. Incubation Period

Variable, 3–25 days (or longer); median 7–10 days.

G. Period of Communicability

Persons are communicable as long as cysts are being shed, which may be many months; the typical shedding period is poorly defined and may be intermittent.

H. Treatment

Several medications are available to treat giardiasis including metronidazole, tinidazole, and nitazoxanide. In general, treatment of asymptomatic carriers is not recommended.

3. CASE DEFINITIONS

A. Clinical Criteria for Diagnosis

An illness caused by the protozoan *Giardia lamblia* (aka *G. intestinalis* or *G. duodenalis*) and characterized by gastrointestinal symptoms such as diarrhea, abdominal cramps, bloating, weight loss, or malabsorption.

B. Laboratory Criteria for Diagnosis

Detection of *Giardia* organisms, antigen or DNA in stool, intestinal fluid, tissue samples or biopsy specimens, or other biological sample
C. Case Definition (2011)

*Probable:* a case that meets the clinical description and that is epidemiologically linked to a confirmed case.

*Confirmed:* a case that meets the clinical description and the criteria for laboratory confirmation as described above.

### 4. DIAGNOSIS AND LABORATORY SERVICES

#### A. Laboratory Diagnosis

The diagnosis of giardiasis is commonly made by the identification of trophozoites or cysts in stool specimens. The organism can either be directly visualized on routine ova and parasite (O&P) testing or visualized using a direct fluorescent antibody test. Enzyme immunoassays (EIA) are also commonly used to diagnose giardiasis.

#### B. Services Available at the Washington State Public Health Laboratories (PHL)

PHL identifies *Giardia* organisms in stool using a direct fluorescent antibody (DFA) test. Consult with Communicable Disease Epidemiology prior to submitting specimens.

Note that PHL requires all clinical specimens have two patient identifiers, a name and a second identifier (e.g., date of birth) both on the specimen label and on the submission form. Due to laboratory accreditation standards, specimens will be rejected for testing if not properly identified. Also include specimen source and collection date.

#### C. Specimen Collection

To maximize the likelihood of detecting *Giardia*, three stool specimens should be collected 48 hours apart or over a 10-day period. Stool should be stored and transported either in Para Pac ULTRA ECOFIX™ or in one tube with 10% formalin and one tube with PVA. If the ECOFIX™ kit is being used, stool should be added to the collection kit until the fluid level reaches the red line marked on the outside of the tube. The kit should then be mixed and shipped at room temperature.


### 5. ROUTINE CASE INVESTIGATION

*The following section describes the routine case investigation for a person with giardiasis. Due to limited public health resources, investigating and educating individual cases are considered optional activities.*

#### A. Manage the Case

1. Hospitalized patients should be cared for using standard precautions. In addition, contact precautions should be used for diapered or incontinent persons for the duration of illness or to control institutional outbreaks.

2. Educate regarding modes of transmission and ways to prevent transmission to others.

   a. Practice good personal hygiene, including effective hand washing, particularly after using the toilet, changing diapers, and before preparing or eating food. The importance of proper hygiene must be stressed, as excretion of the organism may
b. Do not enter public recreational water venues (e.g., pools, fountains, lakes) until 2 weeks after resolution of diarrhea.

c. Avoid sexual practices that might result in oral exposure to stool (e.g., oral-anal contact).

d. While symptomatic with diarrhea, avoid close contact with anyone who has a weakened immune system.

3. **School Restrictions**: Children should not attend school as long as they have diarrhea.

4. **Work or Child Care Restrictions**: Persons should not work as food handlers, child care attendants or health care workers, or attend child care as long as they have diarrhea.

### B. Identify Potential Sources of Infection

Ask about possible exposures in the 3 to 25 days before onset, including:

1. Contact with any acquaintances or household member with a similar illness (anyone meeting the probable case definition should be reported and investigated in the same manner as a confirmed case);

2. Attendance or work at a child care facility by the case or a household member;

3. Source(s) of drinking water, including water at home and work, as well as streams, lakes or other untreated sources;

4. Recreational water exposures: lakes, rivers, swimming pools, water slides, etc.;

5. Travel outside the area;

6. Contact with livestock and other animals.

### C. Identify and Manage Contacts and Other Potentially Exposed Persons

1. Contacts: Collect the name, age, and phone number of contacts with a similar illness. Symptomatic contacts who meet the probable case definition should be investigated as a case.

2. Others at risk for exposure: If a suspected source of infection is identified and has the potential for transmitting infection to a defined population (e.g., contaminated well, infected animal), advise those individuals on measures to avoid exposure.

### D. Environmental Evaluation and Measures

Conduct an environmental evaluation if an ongoing source of exposure is suspected, such as a recreational water venue, drinking water system or child care facility.

### 6. MANAGING SPECIAL SITUATIONS

#### A. Case Attends or Works at a Child Care Facility

1. Exclude persons with giardiasis until the diarrhea has resolved.

2. If the center cares for diapered children, interview the operator and inspect the written attendance records to identify other possible cases among staff or attendees during the
past two months. Note: WAC 170-295-3030 specifies that the operator keep a log of illnesses.

3. If an outbreak is suspected:
   • Facilitate collection of stool specimens for examination from symptomatic staff members, attendees, and family members who have a diarrheal illness consistent with giardiasis.
   • Exclude all symptomatic persons from the child care until diarrhea resolves. Testing and exclusion of asymptomatic carriers, even in the setting of a child care outbreak, is generally not recommended.
   • Instruct the operator and staff about proper food handling and hand washing after diaper handling or bathroom use, and the importance of keeping diaper changing areas away from food preparation areas.
   • Instruct the operator regarding environmental sanitation, particularly in diaper changing areas.
   • Instruct the child care operator to call the local health jurisdiction immediately if new cases of diarrhea occur.
   • Follow-up with the child care center to ensure that surveillance and appropriate prevention measures are being carried out. Manage newly symptomatic children as outlined above.

7. ROUTINE PREVENTION

A. Immunization Recommendations: None

B. Prevention Recommendations (see: http://www.cdc.gov/parasites/giardia/prevent.html)

1. Practice good hygiene.
   • Everywhere
     o Wash hands with soap and clean, running water for at least 20 seconds; rub your hands together to make a lather and be sure to scrub the backs of your hands, between your fingers, and under your nails.
       ▪ Before, during, and after preparing food
       ▪ Before eating food
       ▪ Before and after caring for someone who is sick
       ▪ Before and after treating a cut or wound
       ▪ After using the toilet
       ▪ After changing diapers or cleaning up a child who has used the toilet
       ▪ After blowing your nose, coughing, or sneezing
       ▪ After touching an animal or animal waste
       ▪ After handling pet food or pet treats
After touching garbage
  o Help young children and other people you are caring for with handwashing as needed.

At child care facilities: To reduce the risk of spreading the disease, children with diarrhea should be removed from child care settings until the diarrhea has stopped.

At recreational water venues (for example, pools, beaches, fountains)
  o Protect others by not swimming if you have diarrhea (this is most important for children in diapers).
  o Shower before entering the water.
  o Wash children thoroughly (especially their bottoms) with soap and water after they use the bathroom or after their diapers are changed and before they enter the water.
  o Take children on frequent bathroom breaks and check their diapers often.
  o Change diapers in the bathroom, not by the water.

Around animals: Minimize contact with the feces (poop) of all animals, especially young animals.

When cleaning up animal feces (poop), wear disposable gloves and always wash hands when finished. Wash hands after any contact with animals or their living areas.

Outside: Wash hands after gardening, even if wearing gloves.

2. Avoid water (drinking and recreational) that may be contaminated.
   - Do not swallow water while swimming in pools, hot tubs, interactive fountains, lakes, rivers, springs, ponds, streams or the ocean.
   - Do not drink untreated water from lakes, rivers, springs, ponds, streams, or shallow wells.
   - Do not drink poorly treated water or ice made from water during community outbreaks caused by contaminated drinking water.
   - Do not use or drink poorly treated water or use ice when traveling in countries where the water supply might be unsafe.
   - If the safety of drinking water is in doubt (for example, during or after an outbreak, in a place with poor sanitation or lack of water treatment systems), do one of the following:
     o Drink bottled water.
     o Disinfect tap water by heating it to a rolling boil for 1 minute.
     o Use a filter that has been tested and rated by National Safety Foundation (NSF) Standard 53 or NSF Standard 58 for cyst and oocyst reduction; filtered tap water will need additional treatment to kill or weaken bacteria and viruses.
3. **Avoid eating food that may be contaminated.**
   - Use safe, uncontaminated water to wash all food that is to be eaten raw.
   - After washing vegetables and fruit in safe, uncontaminated water, peel them if you plan to eat them raw.
   - Avoid eating raw or uncooked foods when traveling in countries with poor food and water treatment.

4. **Prevent contact and contamination with feces (poop) during sex.**
   - Use a barrier during oral-anal sex.
   - Wash hands right after handling a condom used during anal sex and after touching the anus or rectal area.

5. **Clean up after ill pets and people.** *Giardia* is hard to completely eliminate from the environment, but you can decrease the risk of human infection or of your dog’s or cat’s reinfection if it has been ill. The risk of acquiring *Giardia* infection from your dog or cat is small, but there are some steps you can take to minimize your exposure.

**ACKNOWLEDGEMENTS**

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**UPDATES**

January 2011:

The Legal Reporting Requirements section has been revised to reflect the 2011 Notifiable Conditions Rule revision. Case classifications and laboratory criteria revised in accordance with 2011 CSTE case definitions.

December 2012:

Section 1C: Due to limited public health resources, individual case investigations are an optional activity for local health jurisdictions.

Section 5 and 6: The content in these sections was reorganized.