Giardiasis
Investigative Guidelines
June 2025

*REPORT WITHIN **1** WORKING DAY*

1. DISEASE REPORTING

1.1 Purpose of Reporting and Surveillance

1. To identify outbreaks and potential sources or sites (e.g., a body of water) of ongoing transmission
2. To assess the risk of transmission to additional persons, and to prevent such transmission
3. To educate people about how to reduce their risk of infection
4. To identify additional cases
5. To characterize the epidemiology of this infection including social, environmental, and behavioral contexts for transmission

1.2 Laboratory and Clinician Reporting Requirements

Laboratories, clinicians, and other persons providing health care are required to report positive lab results and confirmed or suspect cases to the Local Public Health Authority (LPHA) by 5 p.m. of the working day following identification or diagnosis. See §3 for case definitions.

1.3 Local Public Health Authority Reporting and Follow-Up Responsibilities

1. Report all confirmed and presumptive (but not suspect) cases to the Oregon Public Health Division (PHD) Acute and Communicable Disease Prevention (ACDP) Section by 5 p.m. on the last working day of the week of initial clinician or lab report. Enter information into Orpheus as the investigation occurs. See §3 for case definitions.

   Additional case investigation is optional (though appreciated), unless the case is a person ≤3 years of age and attends a child care facility, or there is an increase in the number of cases reported suggesting

an outbreak may be occurring.

2. When investigation is warranted, begin active case investigation within one working day. Interview the case(s) or a proxy to identify potential sources of exposure and identify any close contacts with gastrointestinal illness.
3. if an outbreak is suspected, notify the Acute and Communicable Disease Prevention Section (ACDP) at 971-673-1111 by 5 p.m. of the following work day.

2. THE DISEASE AND ITS EPIDEMIOLOGY

2.1 Etiologic Agent

Giardia lamblia (also known as *G. intestinalis, G. duodenalis*) is a protozoan parasite. It is the most common intestinal parasitic infection reported in the U.S. This flagellated protozoan has two life cycle stages: cyst and trophozoite. The infectious form is the relatively hardy cyst, which 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, symptom-causing form of the parasite. Infected persons shed trophozoites or cysts (or both) in stool. Persons with profuse diarrhea tend to shed mostly trophozoites, which are not infectious. Many, if not most, infected persons are asymptomatic; however, these persons are generally the ones shedding infectious cysts.

2.2 Description of Illness

Symptoms are variable, but typically include sudden onset, watery, foul-smelling diarrhea that may be intermittent, generally persists for 2–4 weeks, and is often accompanied by abdominal cramps and a “bloated” feeling, with excess flatulence (“gas"). Diarrhea is not always present: nausea, bloating, and abdominal pain may be the extent of the symptoms. Weight loss is not uncommon. Because fat absorption is impaired, stools may have a higher than usual fat content (steatorrhea) and thus tend to float. Many infections are asymptomatic. The nature of acquired immunity (if any) is uncertain. Some people with regular exposure may develop some degree of resistance to illness; in others, the illness may become chronic.

2.3 Reservoirs

Animals and some humans are hosts for *G. lamblia*. Overall, humans are certainly the most important source of other human infections. Many non-human animals have been found to be infected, although the importance of most non-human reservoirs is hotly debated. Deer, elk, 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. Molecular studies have identified few cross-species assemblages, suggesting that zoonotic transmission is not as high as was previously thought.[1]

2.4 Sources and Routes of Transmission

Transmission is fecal-oral. Examples include:

1. Contact with infected persons (e.g., asymptomatic children shedding cysts);
2. Drinking fecal-contaminated and inadequately treated water (municipal system, private well, or surface water);
3. Ingesting fecal-contaminated recreational water, whether untreated (rivers, lakes, etc.) or inadequately treated (e.g., swimming pools);[2] or
4. Eating food contaminated by animals or food handlers (rarely documented, though three recent outbreaks have been linked to raw oyster consumption[2] and other outbreaks have been linked to consumption of contaminated raw fruits and vegetables).

Given fecal-oral transmission, risk is elevated in housing and food preparation environments that do not support good hand hygiene or food preparation. Similarly, travel to countries with less stringent food handling or undertreated municipal water also elevates exposure risk.

2.5 Risk Dynamics

Persons in households with young children are at high risk of exposure; most transmission occurs within private households, as opposed to in institutional settings or public accommodations. In the U.S., young children (≤4 years old) have the highest incidence rate, and incidence is higher among men among all age groups, with differences between the sexes the greatest between the ages of 20–60.[3]

Sexual partners of people with *Giardia* are also at risk, as are people who engage in oral-anal sex without using a barrier method to prevent disease transmission.[4]

People who come into contact with surface water through recreational activities (e.g., swimming) are at increased risk, and people who drink inadequately treated surface water (e.g., drinking from streams while camping) are at high risk.

Travel to countries or communities with less stringent food handling or undertreated waste or drinking water also elevates exposure risk, as does lack of access to running water or handwashing facilities.

Persons with cystic fibrosis, hypochlorhydria, immunodeficiency states (especially immunoglobulin deficiency and HIV infection), or malnutrition are at increased risk of severe disease.[4]

In temperate climates like Oregon, giardiasis is more common from June through October.

2.6 Incubation Period

The incubation period for giardiasis period ranges from 3–15 days, with a median of 7–10 days.

2.7 Period of Communicability

Persons are infectious as long as cysts are being shed, which may be days to years; the typical period is poorly defined and, moreover, may be intermittent. To reiterate, asymptomatically infected persons (who are shedding cysts) tend to be much more infectious than persons with diarrhea (who are shedding trophozoites). Cysts can survive in water or moist environments for months.

2.8 Treatment

Giardia is generally a self-limiting illness. Several drugs are effective against *Giardia* infection. Nitroimidazole, metronidazole (Flagyl®) or nitazoxanide (Alinia®) are considered the most effective treatment. Furazolidone (Furoxone®) may be considered for children because it is available in liquid form. Paromomycin is not absorbed, so it is useful for treatment of pregnant people, though waiting until after delivery is preferable, unless medical judgment indicates otherwise. Other options include quinacrine (Atabrine®), tinidazole, or albendazole. Quinacrine is indicated as a primary agent for infected persons with metronidazole-resistant giardiasis and those who should not receive or cannot tolerate metronidazole. Giardiasis that is very resistant may even require a combination of quinacrine and metronidazole.

Treatment failure is not uncommon (~10% of the time), but is not thought to indicate resistance per se. A repeat course of the same or a different medication may be indicated.

Given the often-prolonged nature of *Giardia* infection and symptoms, clinicians should be aware that patients may travel internationally during their course(s) of treatment and might employ treatments that may not be commercially available in the U.S. Inquiring about treatment history and relapse in the context of travel may be warranted.

3. CASE DEFINITIONS, DIAGNOSIS, AND LABORATORY SERVICES

3.1 Confirmed Case

A confirmed case is defined as a person who has:

- gastrointestinal symptoms such as diarrhea, abdominal cramps, bloating, weight loss, or malabsorption

AND

- detection of *Giardia* organisms, antigen, or DNA in feces, intestinal fluid, tissue sample, biopsy specimen, or other biological sample.

If clinical information is not collected and symptoms are not ruled out, it will be assumed that cases were symptomatic for classification purposes.

3.2 Presumptive Case Definition

A presumptive case is defined as a person who has diarrheal illness lasting ≥5 days **AND** is epidemiologically linked to a confirmed case.

3.3 Suspect Case (*not* reportable to Oregon PHD)

A suspect case is defined as a person who person with undiagnosed diarrheal illness lasting <5 days.

3.4 Services Available at the Oregon State Public Health Laboratories

OSPHL does not perform testing to identify *Giardia*. This testing is available in private-sector reference laboratories.

PCR is not generally recommended for diagnosis of giardiasis. That said, *Giardia lamblia* may incidentally be identified using the BioFire® Gastrointestinal PCR panel performed by OSPHL, and such identification is sufficient for confirmation.

4. ROUTINE CASE INVESTIGATION

Collect routine demographic (including "REAL-D" and "SOGI"), laboratory and clinical data. Further investigation of giardiasis cases is not required unless:

1. The case is ≤3 years old and attends childcare where there are diapered children, or
2. The number of recent reports (or other evidence) suggests that an outbreak may be occurring.

Should either circumstance apply, refer to §6.

5. CONTROLLING FURTHER SPREAD

5.1 Education

Given the unlikelihood of person-to-person transmission, consumers should be educated about the general benefit of hygienic food preparation practices, such as washing and refrigerating produce. Therefore, control should focus

preventing the introduction of oocysts to sites of food production and preparation; see §5.5.

1. Provide basic instruction in fecal-oral modes of transmission, environmental disinfection, and personal hygiene, emphasizing proper hand-washing techniques.
2. As relevant, discuss the risks of drinking unfiltered or untreated surface water, including private water supplies or water from streams or lakes while camping or hiking. Generally, persons should be educated about the risks of both giardiasis and cryptosporidiosis. Although some chemical disinfectants are effective against *Giardia*, most are ineffective against *Cryptosporidium*. Bringing water to full, rolling boil is sufficient to kill both parasites. Many backpacking-type filters are also available that remove *Giardia* cysts and the smaller *Cryptosporidium* oocysts. Filters with an absolute pore size of <1 micron (rated NSF/ANSI standard 53 or 58) or which use reverse osmosis are recommended and sufficient for both *Giardia* and *Cryptosporidium*. Filters must be properly maintained.[5]
3. Counsel persons not to enter public recreational water venues (pools, fountains, lakes) until 2 weeks after resolution of diarrhea.
4. Counsel persons to abstain from sexual activity until 2 weeks after resolution of diarrhea, because *Giardia* organisms can be transmitted through sexual contact.[2,6]

5.2 Isolation and Work or Child Care Restrictions

As a general rule, persons should not work as food handlers or attend child care while they have diarrhea. See OAR 414-310-0550 for exclusion criteria from certified child care facilities. Per OAR 333-175-0051, a person should not work in food service for 24 hours after symptoms of vomiting or diarrhea have ended.

5.3 Case Follow-up

Generally not indicated.

5.4 Protection of Contacts

Not applicable.

5.5 Environmental Measures

Implement environmental measures as indicated, e.g., child-care facility inspections, education on disinfecting surfaces, evaluation of drinking water supplies, etc. Remind child-care staff to keep cleaning products safely out of children's reach—preferably stored in a locked cupboard, but not in a location where they will be forgotten and go unused.

Households that use private well water should be advised to test their water annually for contaminants.[2]

6. MANAGING SPECIAL SITUATIONS

6.1 Case is ≤3 Years Old AND Attends a Child Care Facility

1. Instruct the operator and staff about proper food handling, hand-washing after diaper-handling or feces clean-up, and supervising children's handwashing. Commercial products that meet the Environmental Protection Agency's (EPA) standards for "hospital-grade" germicides may be used for cleaning surfaces. A cheap disinfectant for use in bathrooms and diapering areas is a solution of 1 tablespoon of household bleach to 1 quart of water. This solution of is easy to prepare and safe if handled properly. Like other household disinfectants, it can be irritating to the skin, eyes, nose, and mouth if applied from a spray bottle. Because bleach-water solution is weakened by organic material, evaporation, heat, and sunlight, solution should be dated when mixed and replaced every few days.
2. If additional suspect cases are identified, request testing of children who share the same classroom, play area, diapering area, or have other contact with the confirmed case(s): 3 specimens collected on different days is best. The need to check asymptomatic children should be determined by the circumstances of the outbreak investigation in consultation with ACDP epidemiologists.
3. Treatment of asymptomatic children, even in the setting of a child-care outbreak, is not recommended. It may lower prevalence in the short term, but it doesn't help in the long term, and exposes these children to potentially toxic antimicrobials. That said, should an outbreak rage on despite the above measures, wider testing of attendees and adult care-givers combined with treatment of all identified infected may be warranted.
4. Look for possible cases among family members of infected children. Stool exams are indicated for symptomatic household members or other symptomatic children who attend child care.
5. The child-care operator should be instructed to call the LPHA immediately if new cases of diarrhea occur. The facility should be called or visited once each week for six weeks after onset of the last case to verify that surveillance and appropriate preventive measures are being carried out. Newly symptomatic children should be managed as outlined above.

6.2 Reported Incidence is Significantly Higher than Usual

If the number of reported cases in your county is higher than usual for the time of year or for a particular group (age, gender, race, ethnicity, etc.—all that epi stuff like time, person, place), conduct routine follow-up investigations for all cases reported. Work back to include all cases reported at least 2 weeks before the apparent upswing. Interview confirmed cases and other people who may be able to provide pertinent information.

Ask about possible exposures in the 4 to 25 days before onset, including:

1. Name, diagnosis, and phone number or address of any acquaintance or household member with a similar illness (n.n.: any person meeting the presumptive case definition should be reported and investigated in the same manner as a confirmed case);
2. Attendance or work at a care facility by the case or any of their household members;
3. Source(s) of drinking water, including water at home and work, as well as streams, lakes, or other untreated sources, including during leisure activities;
4. Recreational water exposures, lakes, rivers, swimming pools, water slides.
5. Travel outside the area of incidence.

Review the temporal, geographic, and demographic clues that you have. Remember to account for seasonal patterns; giardiasis season in Oregon runs from June through October.

Do not hesitate to consult with the epidemiologists at ACDP.

6.3 Common Source Outbreak Suspected

Consult with ACDP epidemiologists as soon as you suspect an outbreak.

REFERENCES

1. Xiao L, Fayer R. Molecular characterisation of species and genotypes of Cryptosporidium and Giardia and assessment of zoonotic transmission. Int J Parasitol. 2008; 38(11):1239–55. doi:10.1016/j.ijpara.2008.03.006

2. Conners EE, Miller AD, Balachandran N, Robinson BM, Benedict KM. Giardiasis outbreaks—United States, 2012–2017. *MMWR* 2021; 70(9). doi:10.15585/mmwr.mm7009a2

3. Division of Foodborne, Waterborne, and Environmental Diseases. *Giardiasis NNDSS Summary Report for 2019*. US Department of Health and Human Services; 2021. Accessed July 11, 2023. https://www.cdc.gov/healthywater/surveillance/giardiasis/giardiasis-2019.html

4. Leung AKC, Leung AAM, Wong AHC, Sergi CM, Kam JKM. Giardiasis: An overview. Recent Pat Inflamm Allergy Drug Discov 2019; 13(2):134–43. doi:10.2174/1872213X13666190618124901

5. CDC. A guide to water filters. Parasites. Published November 24, 2021. Accessed July 11, 2023. https://www.cdc.gov/parasites/crypto/gen_info/filters.html

6. Escobedo AA, Almirall P, Alfonso M, Cimerman S, Chacín-Bonilla L. Sexual transmission of giardiasis: A neglected route of spread? Acta Trop 2014; 132:106–11. doi:10.1016/j.actatropica.2013.12.025

UPDATE LOG

May 2025 – Added section on risk dynamics; sundry trivial edits. (Mara Arias)

November 2023 – Added information about sexual transmission and abstaining from sexual contact, reverse osmosis as approved filter type, and seasonal variation. Updated duration of symptoms and treatment and preexisting conditions creating vulnerability. Edited for person-centered and equity-oriented language, REAL-D, and SOGI data. (Moriah McSharry McGrath/Nicole Iroz-Elardo)

March 2018 – Updated services provided by OSPHL. They no longer test for *Giardia* ova and parasites. Updated information in filtration recommendations. (Bancroft)

November 2015 – Added PCR as a test type for confirmation. Updated symptoms and treatment options. Put into new template. (Bancroft)

May 2012 – Case definitions were modified to be in line with CSTE national notifiable disease case definitions. These new guidelines call for clinical signs and symptoms to be present to meet the case definition. If resources permit, interview all cases or collect at least demographic, clinical and laboratory data to decide whether the case meets the definition of a confirmed or presumptive case. If clinical information is not collected, and symptoms are not ruled out, it will be assumed that cases were symptomatic for classification purposes. (June Bancroft)