

PUBLIC HEALTH REFERENCE SHEET

Cryptosporidiosis



Name	<i>Cryptosporidium hominis</i> and <i>Cryptosporidium parvum</i>
Reservoir & Transmission	Humans and various animals; Fecal-oral transmission, which includes person-to-person, animal-to-person, waterborne, and foodborne transmission
Incubation Period	Variable: 1–12 days is the likely range; 7-day average
Common Symptoms	Diarrhea, which may be profuse and watery and is associated with abdominal pain and cramping
Gold Standard Diagnostic Test	Fecal smears for identification of oocysts or of life cycle stages in intestinal biopsy sections. For epidemiological studies, serology tests may be useful.
Risk Groups	Children younger than 2 years, animal handlers, travelers, men who have sex with men, and close personal contacts of infected individuals
Geographic Significance	Worldwide. In industrialized countries, prevalence is <1%–4.5%. In developing regions, prevalence ranges from 3% to 20%.

What is cryptosporidiosis?

Cryptosporidium, an intracellular protozoan, is a microscopic parasite that causes the diarrheal disease cryptosporidiosis. Both the parasite and the disease are commonly known as “Crypto.” There are many species of *Cryptosporidium* that infect animals, some of which also infect humans. The parasite is protected by an outer shell that allows it to survive outside the body for long periods of time and makes it very tolerant to chlorine disinfection.

What is the occurrence of cryptosporidiosis?

Cryptosporidium is a leading cause of waterborne disease among humans in the United States. *Cryptosporidium* causes over half of the reported waterborne disease outbreaks associated with swimming in chlorinated public swimming pools. As of 2018, an estimated 823,000 cryptosporidiosis cases occur in the U.S. annually.

How is cryptosporidiosis transmitted?

Crypto lives in the gut of infected humans or animals. An infected person or animal sheds Crypto parasites (oocysts) in their stool, which can contain 10 million to 100 million parasites in a single bowel movement. Swallowing as few as 10 *Cryptosporidium* oocysts can cause infection. Crypto can be found in water, food, soil, or on surfaces or hands that have been contaminated with the feces of humans or animals that are infected with the parasite. While this parasite can be transmitted in several different ways, water (i.e., drinking water and recreational water) is the most common way to spread the parasite.

- Swallowing recreational water found in pools, fountains, lakes, and rivers serves as a major mode of transmission, especially due to the parasite’s high chlorine tolerance and resistance to other chemical water disinfectants. The oocysts are not always effectively removed by filtration systems.
- Consuming contaminated water, ice, beverages, unpasteurized apple cider or milk, or undercooked food is a main source of disease transmission.
- Touching contaminated surfaces or objects (e.g., toys, bathroom fixtures, changing tables, and diaper pails), changing diapers, caring for an infected person, and touching an infected animal can transmit the parasite.
- Exposure through oral-anal sexual contact is a contributing cause of disease.

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Who is at risk for cryptosporidiosis?

People in poor health or have a weakened immune system are at higher risk for more severe and prolonged illness. Rapid fluid loss from diarrhea may be life threatening to infants. Pregnant women and young children may be more susceptible to dehydration. People who are most likely to become infected with *Cryptosporidium* include children who attend childcare centers; childcare workers; parents of infected children; people who take care of people who are infected; international travelers; backpackers, hikers, and campers who drink unfiltered or untreated water such as from shallow and unprotected wells; those who handle infected animals like sheep; or those exposed to human feces such as through sexual contact.

What are the signs and symptoms of cryptosporidiosis?

Symptoms of cryptosporidiosis generally begin 2 to 10 days (average 7 days) after becoming infected with the parasite. Some people with Crypto do not have symptoms. The most common symptom of cryptosporidiosis is watery diarrhea. Other symptoms include stomach cramps or pain, dehydration, nausea, vomiting, fever, and weight loss. Symptoms can come and go for up to 30 days but usually last about 1 to 2 weeks (range of a few days to 4 or more weeks) in persons with healthy immune systems.

What are potential complications of cryptosporidiosis?

People may experience a recurrence of symptoms after a brief period of recovery before the illness ends. The small intestine is the site most commonly affected. However, in immunocompromised persons, *Cryptosporidium* infections could possibly affect other areas of the digestive tract or the respiratory tract. People with weakened immune systems may develop serious, chronic, and sometimes fatal illness.

How is cryptosporidiosis diagnosed?

Crypto is diagnosed by examining stool samples. People infected with Crypto can shed the parasite irregularly through their stool, so three samples may be collected on three different days to ensure that a negative test result is accurate. Most often, stool specimens are examined microscopically using different techniques (e.g., acid-fast staining, direct fluorescent antibody (DFA), and/or enzyme immunoassays (EIA) for detection of *Cryptosporidium* sp. antigens). *Cryptosporidium* nucleic acid (DNA) can be detected from any clinical specimen through molecular methods (i.e., polymerase chain reaction (PCR), sequencing, nucleic acid amplification test (NAAT)) and can be used to identify *Cryptosporidium* at the species level. Tests for *Cryptosporidium* are not routinely done in most laboratories; therefore, healthcare providers should specifically request testing for this parasite.

How is cryptosporidiosis treated?

Nitazoxanide, an antiprotozoal agent, has been FDA-approved for treatment of diarrhea caused by *Cryptosporidium* in people with healthy immune systems. However, the effectiveness of nitazoxanide in immunosuppressed individuals is unclear. Prevent or manage dehydration. Most people with healthy immune systems will recover from cryptosporidiosis without treatment.

How can cryptosporidiosis be prevented?

Good hygiene practices and disinfecting surfaces and objects can help prevent outbreaks. Exclude children and staff from the childcare setting until the diarrhea has resolved.

What are some Public Health considerations?

- Refrain from swimming until 2 weeks after resolution of symptoms due to *Cryptosporidium*'s chlorine resistance and documented excretion for weeks after resolution of symptoms.

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- Document the source of infection, if known.
- Document the circumstances under which the case patient was exposed including duty exposure, occupational activities, environmental exposures, or other high-risk activities.
- Document if the case patient works in, lives in, or attends a high transmission setting such as food handling, daycare, school, group living, health care, training center, or ship.

References:

- "Cryptosporidiosis," Centers for Disease Control and Prevention (CDC), last reviewed December 14, 2021. <https://www.cdc.gov/parasites/crypto/>
- Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions*.
<https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events-Guidelines>
- Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

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