



Cryptosporidiosis

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Information in this chapter was adapted with permission from Alberta Health. For more information about cryptosporidiosis see: [Alberta Public Health Disease Management Guidelines: Cryptosporidiosis](#).

1. CASE DEFINITION

Confirmed Case

- Laboratory confirmation of infection with or without clinical illness* from an appropriate clinical specimen**
 - Demonstration of *Cryptosporidium* oocysts **OR**
 - Detection of *Cryptosporidium* nucleic acid (e.g., PCR) in an appropriate clinical specimen** **OR**
 - Detection of *Cryptosporidium* antigen by an approved method (e.g. EIA)

Probable Case

- Clinical illness* in a person who is epidemiologically linked to a confirmed case.

*Clinical Illness is characterized by

- Diarrhea (often profuse and watery)
- Abdominal cramps with or without loss of appetite, low grade fever, nausea, general malaise, and vomiting
- The illness may be prolonged in severely immunocompromised persons

2. DIAGNOSIS

- Diagnosis is made through examination of stools, intestinal fluid, or small bowel biopsy for oocysts or parasitic antigens



- Detection of this organism is difficult unless it is looked for specifically
- It may require more than one specimen as shedding of oocysts is intermittent

3. REPORTING

Health Care Professionals

- Confirmed or probable (with epidemiology link) cases are to be reported to the Office of the Chief Public Health Officer (OCPHO) by phone (867) 920-8646, fax (867) 873-0442, or email within **24 hours AND**
- Within **24 hours** complete and fax
 - [Food and Waterborne Illness Investigation Form](#) to the Environmental Health Office (867) 669-7517 **AND**
 - [Communicable Disease Report Form](#) to the OCPHO to (867) 873-0442
- **Immediately** report all outbreaks or suspect outbreaks by telephone (867) 920-8646 to the OCPHO

Laboratories

- Report and fax (867) 873-0442 all positive results to the OCPHO with **24 hours**

4. OVERVIEW

Causative Agent

- *Cryptosporidium parvum* is an intracellular protozoan parasite
- A ubiquitous pathogen, it is one of both medical and veterinary importance
- *Cryptosporidium parvum* is the most prevalent species causing disease in humans
- Additional species names have been given when isolated from different hosts
- It is known to infect and reproduce in the epithelial cell lining of the digestive or respiratory tracts of most vertebrates
- *C. parvum* is a spore forming parasite and its lifecycle is completed within a single host
- *Cryptosporidium parvum* and *Cryptosporidium hominis* are the leading causes of cryptosporidiosis
- Other species are known to cause diarrheal illness in immunocompromised individuals

Clinical Presentation and Major Complications

For more information about the clinical presentation and major complications of cryptosporidiosis see [Alberta Public Health Disease Management Guidelines: Cryptosporidiosis](#).



Transmission

- Transmission of *Cryptosporidium* is via the fecal-oral route including
 - Person to person
 - Animal to person
 - Animal to environment, especially waterborne and foodborne
- Transmission between sexual partners has been reported
- The parasite infects the intestinal epithelial cells resulting in oocysts in feces that can survive under adverse environmental conditions for a long period of time
- The oocysts are highly resistant to chemical disinfectants used to purify drinking water
- The mode of transmission of *Cryptosporidium* increases the risk of infection for those living in group settings, travelers to endemic areas, and immunocompromised persons
- Fewer than 10 organisms can cause disease

Incubation Period

- Not well defined but 1–12 days is the likely range, with an average of about 7 days

Clinical Guidance

For patient-specific clinical management consult your local healthcare professional, paediatrician, infectious disease specialist, or the [NWT Clinical Practice Guidelines](#).

5. PUBLIC HEALTH MEASURES

Key Investigations

- Determine possible source of infection taking into consideration the incubation period, reservoir, and mode of transmission
- Assessment may include:
 - Determining contact with cattle, sheep, or other domestic animals
 - Determining recent visits to farms or petting zoos
 - Determining consumption of contaminated food or water, or other drink including unpasteurized milk
 - Obtaining a food history, identifying recent exposure to recreational water (treated or untreated)
 - Determining history of high-risk sexual practices, especially contact with feces
 - Identifying history of recent travel
- Assess for history of residing in areas with poor sanitation including improper water treatment and sewage disposal and include recent immigration



- Assess for history of daycare or institutional exposure
- Assess for history of similar symptoms in other members of the household
- Suspected contaminated food may be held or destroyed to prevent of consumption
- Identify contacts

Management of a Case

- All cases should be instructed about disease transmission, appropriate personal hygiene, routine practices, and contact precautions
- Exclusion from work should be considered for symptomatic persons who are:
 - **Food handlers** whose work involves,
 - Touching unwrapped food to be consumed raw or without further cooking and/or
 - Handling equipment or utensils that touch such food
 - **Healthcare, daycare, or other staff** who have contact through serving food, with highly susceptible patients or persons, in whom an intestinal infection would have particularly serious consequences, and who are involved in patient care or care of young children, elderly or dependent persons
 - **Children attending daycares** or similar facilities who are diapered or unable to implement good standards of personal hygiene
 - **Older children or adults** who are unable to implement good standards of personal hygiene (e.g., mentally, or physically challenged)
- Exclusion applies until at least 48 hours after normal stools have resumed
- Asymptomatic individuals who are included in the above categories are generally not excluded from work or daycare. However, the decision to exclude will be made by the CPHO (or designate)
- Reassignment to low-risk areas may be used as an alternative to exclusion
- When possible, people taking immunosuppressive therapy are advised to reduce or stop under the guidance of an infectious disease physician
- Contact precautions should be used in healthcare settings where children or adults have poor hygiene or incontinence that cannot be contained, otherwise, routine practices are adequate

Management of Contacts

- Contacts include:
 - Persons living in the household
 - Children and childcare workers in a daycare/day home
 - Individuals exposed to the same source (if it is identified)



- Contacts should be instructed in disease transmission, appropriate personal hygiene, routine practices, and contact precautions
- Symptomatic contacts should be assessed by a physician
- According to CPHO (or designate) assessment, contacts who are symptomatic may be excluded from the following,
 - Daycare or similar facilities
 - Occupations involving food handling, patient care, care of the young, care of the elderly, and care of dependent persons
- Asymptomatic contacts, in general, are not excluded from work or daycare

Prevention

- Educate members of the public about personal hygiene, especially the sanitary disposal of feces, and careful hand washing after defecation and sexual contact, and before preparing or eating food
- Provide education to food handlers about proper food and equipment handling and hygiene, especially in avoiding cross-contamination from raw meat products, and thorough hand washing
- Advise infected individuals to avoid food preparation
- Educate about the risk of sexual practices that permit fecal-oral contact
- Educate about condom use for safer sex
- Test private water supplies for presence of parasitic contamination, if suspected
- Encourage hand washing after any animal contact including pets, especially those in contact with calves and other animals with diarrhea
- Advise infected individuals to not use public recreational water (e.g., pools, lakes, ponds) for two weeks after the symptoms resolve
- Adherence to the regulations outlined in the [Food establishment safety regulations of the NWT Public Health Act](#)
- If *Cryptosporidium* in municipal drinking water is suspected or known to be the cause of an outbreak, public health authorities will issue a boil water advisory to help control the spread of illness
- In the outdoors, water should be boiled for at least one minute before it is used for drinking, food preparation or dental hygiene
- Travelers to countries where the safety of drinking water is suspect should boil or disinfect and filter water that is to be used for drinking, food preparation, or dental hygiene



6. PUBLIC & HEALTH PROFESSIONAL EDUCATION

- Government of Canada Cryptosporidiosis for Healthcare Professionals: [Cryptosporidiosis](#)
- Centers for Disease Control and Prevention: [Cryptosporidiosis](#)

7. EPIDEMIOLOGY

- In 2000, 614 cases of cryptosporidiosis were reported in Canada
- Rates are gradually increasing with time and in 2019, 1,490 cases were reported
- For more information on the epidemiology of cryptosporidiosis in the NWT see: [Epidemiological Summary of Communicable Diseases HSS Professionals](#).

8. REFERENCES

Information in this chapter was adapted with permission from Alberta Health's Public Health Disease Management Guidelines. For more information see Alberta Public Health Disease Management Guidelines: [Cryptosporidiosis](#).

Additional resources for this chapter include:

1. US CDC Laboratory Identification of Parasites of Public Health Concern-Cryptosporidiosis: <https://www.cdc.gov/dpdx/cryptosporidiosis/index.html>
2. Government of Canada Cryptosporidiosis Prevention and Risks: <https://www.canada.ca/en/public-health/services/diseases/cryptosporidiosis/prevention-risks.html>
3. Public Health Agency of Canada. Notifiable Disease On-Line: Cryptosporidiosis: <https://dsol-smed.phac-aspc.gc.ca/dsol-smed/ndis/charts.php?c=y1>