

Appendix A: Disease-Specific Chapters

Chapter: Cryptosporidiosis

Cryptosporidiosis

- Communicable
 Virulent

Health Protection and Promotion Act: Ontario Regulation 559/91 – Specification of Reportable Diseases

1) Aetiologic Agent:	<i>Cryptosporidium</i> are obligate parasitic protozoa that excrete viable, environmentally resistant oocysts in feces that are infectious. The most common species causing disease in humans are <i>C. hominis</i> , which only infects humans and <i>C. parvum</i> , which infects humans, cattle and other mammals (2).
2) Case Definition:	
Surveillance Case Definition	See Appendix B
Outbreak Case Definition	<p>The outbreak case definition varies with the outbreak under investigation. Consideration should be given to the following when establishing an outbreak case definition:</p> <ol style="list-style-type: none">1. Clinical, laboratory and/or epidemiological criteria2. The time frame for occurrence3. The geographic location(s) or place(s) where cases live or became ill/exposed4. Special attributes of cases (e.g. age, underlying conditions) and/or aetiologic agent <p>Cases may be classified by levels of probability (e.g. confirmed, probable and/or suspect).</p>
3) Identification:	
Clinical Presentation	Cryptosporidiosis is a parasitic infection that commonly presents as gastroenteritis. The major symptom is diarrhea, which can be watery and profuse preceded by anorexia and vomiting in children. The diarrhea is associated with cramping and abdominal pain. General malaise, fever, anorexia, nausea and vomiting occur less often. Asymptomatic infections are common and constitute a source of infection for others (1).
Diagnosis	See Appendix B Diagnosis is through demonstration of <i>Cryptosporidium</i> oocysts in appropriate clinical specimen (e.g. stool, intestinal fluid, or small bowel biopsy) through microscopy or through detection of <i>Cryptosporidium</i> DNA or demonstration of <i>Cryptosporidium</i> antigen by an approved method (e.g. EIA, ICT).

4) Epidemiology:	
Occurrence	Worldwide. Outbreaks have been associated with exposure to recreational water (e.g., splash parks and swimming pools) and lakes, and with drinking unfiltered water and contaminated beverages (1). In Ontario cases of cryptosporidiosis tend to increase during the summer and early fall. Exposure to recreational water is often associated with cryptosporidiosis outbreaks in Ontario.
Reservoir	Humans and animals, including cattle (1).
Modes of Transmission	Fecal-oral, which includes person-to-person, animal-to-person, waterborne (recreational or drinking water) and foodborne transmission (1).
Incubation Period	Not known precisely; 1 – 12 days is the likely range with an average of about 7 days (1).
Period of Communicability	Oocysts, the infectious components of the parasites life cycle, appear in stool at the onset of symptoms and are infectious immediately upon excretion; infectious period may be as long as several weeks after symptoms resolve and up to six months in soil with suitable conditions (1).
Susceptibility and Resistance	Persons with intact immune function usually have asymptomatic or self-limiting illness. It has been estimated that 10-20% of AIDS patients develop infection at some time during their illness (1).
5) Reporting Requirements:	
To local Board of Health	Confirmed and suspected cases shall be reported to the medical officer of health by persons required to do so under the <i>Health Protection and Promotion Act</i> , R.S.O. 1990.
To Public Health Division (PHD)	<p>Report only case classifications specified in the case definition to PHD using the integrated Public Health Information System (iPHIS), or any other method specified by the Ministry within five (5) business days of receipt of initial notification as per <i>iPHIS Bulletin</i> Number 17: Timely Entry of Cases (3).</p> <p>The minimum data elements to be reported for each case is specified in the following sources:</p> <ul style="list-style-type: none"> • <i>Ontario Regulation 569</i> (Reports) under the Health Protection and Promotion Act (HPPA); • The disease-specific User Guides published by the Ministry, and • Bulletins and directives issued by the Ministry.

6) Prevention and Control Measures:

Personal Prevention Measures

Prevention Measures:

- Avoid using public recreational waters such as swimming pools and splash pads for 2 weeks after symptoms have resolved (2)
- Use proper hand hygiene after using sanitary facilities, toileting and diapering, handling pets, and before and after handling food
- Cook thoroughly all food derived from animal sources
- Boil, filter or otherwise treat private or non-municipal drinking water supplies to destroy infectious oocysts. Chemical disinfectants are not effective against oocysts in drinking water

Infection Prevention and Control Strategies

Strategies:

- A safe water supply which is of primary importance
- Educate the public about hand hygiene, washing produce and the risks involved with sexual contact
- Recreational water operators should be advised about proper filtration techniques and procedures for the management of fecal accidents

In hospital, in addition to routine practices, contact precautions are recommended for diapered or incontinent children (2).

Exclude food handlers, health care workers, daycare staff and attendees who are symptomatic until 24 hours after cessation of symptoms (1).

Management of Cases

Investigate cases of cryptosporidiosis to determine the source of infection. Refer to Section 5: *Reporting Requirements* above for relevant data to be collected during case investigation. The following disease-specific information should also be obtained during case management:

- Symptoms and date of symptom onset
- History of out-of-province or international travel
- History of exposure or risk behaviours such as exposure to farm animals, petting zoos or public recreational water
- Earliest and latest exposure dates
- Residency/attendance/occupation at a facility or institution

Exclude food handlers, health care workers, daycare staff and attendees who are symptomatic until 24 hours after cessation of symptoms (1). More detailed information on exclusion is available in the resource "Guidelines for the Management of Enteric Diseases in

	<p>Healthcare Workers, Food Handlers and Daycare Staff and Attendees”.</p> <p>Provide education about the illness and how to prevent spread, emphasizing strict hand hygiene.</p> <p>There is no specific treatment except rehydration when indicated (1).</p>
Management of Contacts	<p>Investigate household contacts and contacts who may have shared a common source exposure.</p> <p>Symptomatic contacts that are food handlers, health care workers, daycare staff and attendees should be tested.</p>
Management of Outbreaks	<p>As with most enteric diseases, an outbreak is defined as the occurrence of two or more cases of enteric illness linked by time, common exposure or source and most often location.</p> <p>Provide public health management of outbreaks or clusters in order to identify the source of illness, stop the outbreak and limit secondary spread. As per this Protocol, outbreak management shall comprise of but not be limited to the following general steps:</p> <ul style="list-style-type: none"> • Confirm diagnosis and verify the outbreak; • Establish an outbreak team; • Develop an outbreak case definition; • Implement prevention and control measures; • Implement and tailor communication and notification plans depending on the scope of the outbreak; • Conduct epidemiological analysis on data collected; • Conduct environmental inspections of implicated premise where applicable; • Coordinate and collect appropriate clinical specimens where applicable; • Prepare a written report, and • Declare the outbreak over in collaboration with the outbreak team.
7) References	<p>(1) Heymann D, editor. Control of communicable diseases manual. 18th ed. Washington: American Public Health Association; 2004.</p> <p>(2) Pickering LK, Baker CJ, Long SS, McMillan JA, editors. Red book: 2006 report of the Committee on Infectious Diseases. 27th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2006. Section 3, Summaries of infectious diseases; p. 270 – 272.</p> <p>(3) Ministry of Health and Long-Term Care. Timely entry of cases. iPHIS Bulletin. 2007 May 11;17.</p>
8) Additional Resources	<p>Ministry of Health and Long-Term Care. Drinking water protocol. Toronto: Queen’s Printer for Ontario. 2008. Available from http://www.health.gov.on.ca/english/providers/program/pubhealth/oph_standards/ophs/progstds/protocols/drinking_water.pdf. (or as</p>

current)

Ministry of Health and Long-Term Care. Protocol for the investigation and control of Cryptosporidium and Giardia waterborne outbreaks. Toronto: Queen's Printer for Ontario; 1997. *Currently under revision*: Ministry of Health and Long-Term Care. Investigation and control of Cryptosporidium and Giardia waterborne outbreaks guidance document. Toronto: Queen's Printer for Ontario; Forthcoming 2009.

Ministry of Health and Long Term Care, Advisory Committee on Communicable Diseases, "Enteric Disease Screening Recommendations and Case Management Guidelines on Food Handlers and Patient Care Workers", 1990 or as current (Currently being revised as "Guidelines for the Management of Enteric Diseases in Healthcare Workers, Food Handlers and Day Care Staff and Attendees").

Fayer R, Xiao L, editors. Cryptosporidium and cryptosporidiosis. 2nd ed. Boca Raton, FL: CRC Press; 2007.

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