

Appendix A: Disease-Specific Chapters

Chapter: Cyclosporiasis

Cyclosporiasis

- Communicable
 Virulent

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

1) Aetiologic Agent:	The causative agent is <i>Cyclospora cayetanensis</i> , a sporulating coccidian protozoan parasite that infects the upper small bowel (1, 2). Non-infectious, unsporulated oocysts are passed in the stool. Sporulation outside the host produces infectious organisms (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 criteria;2. The time frame for occurrence;3. The geographic location(s) or place(s) where cases live or became ill/exposed, and4. 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 or suspect).</p>
3) Identification:	
Clinical Presentation	Profuse, watery diarrhea is the most common symptom. Nausea, vomiting, anorexia, substantial weight loss, abdominal bloating or cramping and prolonged fatigue can also occur. Diarrhea can alternate with constipation (2). In untreated cases, persistent diarrheal illness may occur.
Diagnosis	See Appendix B
4) Epidemiology:	
Occurrence	<i>Cyclospora</i> is not endemic in Canada. It has been associated with diarrhea in travellers to Asia, the Caribbean, Mexico and Peru (1). Outbreaks in the US and Canada during 1996 and 1997 were associated with ingestion of fresh raspberries imported from Central

	<p>America (2).</p> <p>In Ontario, cases of Cyclosporiasis typically occur more often in the spring and summer. Previous clusters of Cyclosporiasis have been associated with the consumption of imported produce. Most sporadic cases have been associated with travel.</p>
Reservoir	Confirmed natural infection in animals and humans has not been documented.
Modes of Transmission	<p><i>Cyclospora</i> is transmitted through food or water contaminated by human feces. Investigations done by the Canadian Food Inspection Agency indicate that fresh fruits and vegetables (berries, basil and mesclun lettuce) may be sources of <i>Cyclospora</i> infection.</p> <p><i>Cyclospora</i> is not naturally found in or on fresh fruits and vegetables, or any other foods. However, it is suspected that food contamination occurs during cultivation, harvest, packaging or transportation through contact with contaminated water or infected workers (3).</p> <p><i>Cyclospora</i> oocysts in freshly excreted stool are not infectious. Days to weeks outside the host are required to sporulate and become infectious (1). Currently, there is no documentation of person-to-person spread.</p>
Incubation Period	Incubation period is approximately 7 days with a range of 1 – 14 days (2).
Period of Communicability	The disappearance of symptoms and oocysts usually occurs simultaneously. The mean duration of organism shedding is 23 days (1).
Susceptibility and Resistance	Available evidence is limited.

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 one (1) business day of receipt of initial notification as per <i>iPHIS Bulletin</i> Number 17: Timely Entry of Cases (4).</p> <p>The minimum data elements to be reported for each case is specified in the following:</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	<p>Prevention measures are similar to those for other enteric diseases.</p> <ul style="list-style-type: none">• Wash hands after using sanitary facilities and before handling food• Wash fresh fruits and vegetables• Dispose of feces in a sanitary manner• Travelers should avoid foods from questionable sources such as roadside vendors
Infection Prevention and Control Strategies	<p>Disseminate general public health education messages about hand hygiene and safe food handling.</p>
Management of Cases	<p>Investigate cases of cyclosporiasis to determine the source of infection. Refer to Section 5: <i>Reporting Requirements</i> above for relevant data to be collected during case investigation. The following disease-specific information should also be obtained during case management:</p> <ul style="list-style-type: none">• Symptoms and date of symptom onset• History of out-of-province or international travel including earliest and latest exposure dates• Obtain detailed food history (inquire especially about fresh produce or herbs) <p>Treatment is under the direction of the attending health care provider.</p> <p>Provide education on hand hygiene, proper food handling practices and on preventing the spread of infection.</p> <p>Exclude symptomatic cases from food handling until 24 hours after cessation of symptoms.</p>
Management of Contacts	<p>Not applicable</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. Provide public health management of outbreaks or clusters in order to identify the source of illness, stop the outbreak and limit secondary spread.</p> <p>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;

	<ul style="list-style-type: none"> • 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.
<p>7) References</p>	<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. 550-552.</p> <p>(3) Canadian Food Inspection Agency. Food Safety Facts on Cyclospora [Internet]. Ottawa: Canadian Food Inspection Agency; 2002 [cited 2009 Feb 3]. Available from: http://www.inspection.gc.ca/english/fssa/concen/cause/cyclospora.html.</p> <p>(4) Ministry of Health and Long-Term Care. Timely entry of cases. iPHIS Bulletin. 2007 May 11;17.</p>
<p>8) Additional Resources</p>	<p>Ministry of Health and Long-Term Care. Food safety 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/food_safety.pdf. (or as current)</p> <p>Ministry of Health and Long-Term Care. Infectious diseases protocol. Toronto: Queen’s Printer for Ontario; 2009. Available from http://www.health.gov.on.ca/english/providers/program/pubhealth/oph_standards/ophs/infdispro.html (or as current)</p> <p><i>Health Protection and Promotion Act</i>, R.S.O. 1990, c. H.7. Available from http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90h07_e.htm.</p> <p>Gregg MB, editor. Field epidemiology. 2nd ed. New York: Oxford University Press; 2002.</p>

