

# Enteric Illness

## Cyclosporiasis

Date Reviewed: June, 2012

Section: 3-90

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### Notification Timeline:

**From Lab/Practitioner to Public Health:** Within 48 hours.

**From Public Health to Ministry of Health:** Within 2 weeks.

**Public Health Follow-up Timeline:** Initiate within 24-48 hours.

### Information

**Case Definition** (Public Health Agency of Canada, May 2008)

<b>Confirmed Case</b>	Laboratory confirmation of infection in a person with or without clinical illness:*
	<ul style="list-style-type: none"><li>demonstration of <i>Cyclospora cayetanensis</i> oocysts in stool, duodenal/jejunal aspirate or small bowel biopsy.</li></ul>
<b>Probable Case<sup>1</sup></b>	Clinical illness* in a person with evidence of: <ul style="list-style-type: none"><li>an epidemiologic link to a confirmed case either by consumption of the same food or exposure to food known to be handled by a confirmed case</li></ul> <b>OR</b> <ul style="list-style-type: none"><li>a history of travel to a cyclospora-endemic area who is epidemiologically linked to a confirmed case.</li></ul>
*Clinical illness is characterized by watery diarrhea, loss of appetite, weight loss, abdominal bloating and cramping, increased flatus, nausea, fatigue and low-grade fever. Vomiting may also be noted. Relapses and asymptomatic infections can occur. Some evidence suggests that symptoms may be more severe and long-lasting in immunocompromised individuals.	

### Causative Agent

*Cyclospora cayetanensis* is a sporulating coccidian protozoan infecting the upper small intestine (Heymann, 2008). *Cyclospora* is resistant to chlorination.

### Symptoms

 (American Academy of Pediatrics, 2009)

- Watery diarrhea is the most common symptom.
- Nausea, anorexia, abdominal cramps or bloating, prolonged fatigue and substantial weight loss can also occur. Approximately 50% of individuals will have low grade fever.
- Diarrhea can alternate with constipation.

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<sup>1</sup> Probable case definitions are provided as guidelines to assist with case finding and public health management, and are not for national notification purposes.



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- Infection is usually self-limited, but diarrhea and systemic symptoms can vary in intensity for weeks to months.
- Relapse and persistence of symptoms is common in untreated people, even in immunocompetent persons.
- In the immunocompromised, diarrhea can last for months in some patients.
- Some infected persons are asymptomatic.

### Incubation Period

Range of 2-14 days, usually 1 week (American Academy of Pediatrics, 2009).

### Reservoir/Source

- Humans are the only known hosts (American Academy of Pediatrics, 2009).
- Infected persons excrete the oocyst stage of *Cyclospora* in their feces.
- Outbreaks have occurred from ingestion of contaminated imported raspberries, basil and lettuce.
- Cyclosporiasis is most common in tropical and subtropical countries and is endemic in many developing countries (Heymann, 2008).

### Mode of Transmission

- Transmission usually occurs through the ingestion of contaminated food (usually fresh produce like fruits and vegetables) or water, or swimming in contaminated water.
- Person-to-person and animal-to-person transmissions have not been documented.
- *Cyclospora* oocysts in freshly excreted stool are not infectious. They require days to weeks outside the host to sporulate and become infectious. Indirect transmission can occur if an infected person contaminated the environment and oocysts have sufficient time, under appropriate conditions, to become infectious (American Academy of Pediatrics, 2009).

### Period of Communicability

The disappearance of symptoms and oocysts usually occurs simultaneously. The mean duration of organism shedding is 23 days (Alberta Health and Wellness, 2008).

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### Specimen Collection and Transport

*Cyclospora* oocysts may be shed intermittently and at low levels, even by persons with profuse diarrhea. A single negative stool specimen does not exclude the diagnosis; several specimens that are processed and examined with sensitive methods may be required.

Submit stool in container with SAF preservative. Fill specimen to the line of the container, do not over or under fill. Mix stool well with preservative using spoon provided before sending.

Refer to the Saskatchewan Disease Control Laboratory Compendium of Tests for details at <http://sdcl-testviewer.ehealthsask.ca>.

### Methods of Control/Role of Investigator

#### Prevention and Education

Refer to the [Enteric Introduction and General Considerations](#) section of the manual that highlights topics for client education that should be considered as well as provides information on high-risk groups and activities.

- Educate about personal hygiene, especially the sanitary disposal of feces and careful hand washing after defecation.
- Educate food handlers about proper food handling, preparation, and hygiene.
- Avoid food or water that may be contaminated with sewage.
- Encourage thorough washing of fresh produce prior to consumption, although this is not always effective.
- Travellers should be advised regarding water treatment techniques – refer to Saskatchewan International Travel Manual.

### Management

#### I. Case

##### History

- Obtain food history, especially recent consumption of fresh produce – e.g., raspberries, basil or lettuce (Heymann, 2008).
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- Determine history of recent travel in areas with poor sanitation including improper water treatment and sewage disposal.
- Determine history of recent immigration.

### **Immunization**

None.

### **Treatment/Supportive Therapy**

Treatment choices are governed by the most recent guidelines. The public health practitioner should direct any questions regarding the current treatment protocols to the physician or Medical Health Officer (MHO). See [Appendix H - Sources for Clinical Treatment Guidelines](#).

Supportive measures include management of fluid and electrolyte balance, and rest. In patients who are not treated, illness can be protracted, with remitting and relapsing symptoms (Heymann, 2008).

### **Exclusion** (work, school, daycare, and other public environments)

Symptomatic and asymptomatic individuals are generally not excluded from work or daycare.

### **Referrals**

None.

## **II. Contacts/Contact Investigation**

### **Contact Definition**

Contacts include:

- individuals exposed to the same source (if it is identified).

### **Testing**

None.

### **Prophylaxis/Immunization**

None.

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### **Exclusion**

None.

### **III. Environment**

#### **Child Care Centre Control Measures**

Strict enforcement of infection control measures. Refer to Saskatchewan Ministry of Health Infection Control Manual for Child Care Facilities available at

<http://www.saskatchewan.ca/live/births-deaths-marriages-and-divorces/starting-a-family/early-learning-and-child-care/child-care>.

#### **Health Facilities Control Measures**

Refer to your Health Authority Infection Control Manual. In addition to standard precautions, contact precautions are recommended for diapered or incontinent children.



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### References

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- Heymann, D. L. (Ed.). (2008). *Control of communicable diseases manual* (19<sup>th</sup> ed.). Washington, DC: American Public Health Association.
- Public Health Agency of Canada. (2008). Case definitions for communicable diseases under national surveillance. *Canada Communicable Disease Report (CCDR)*, 35S2, November 2009. Retrieved June, 2012 from <http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/09vol35/35s2/Cyclospor-eng.php>.
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## Cyclosporiasis Data Collection Worksheet

Panorama QA complete:  Yes  No  
Initials: \_\_\_\_\_

Please complete all sections.

Panorama Client ID: \_\_\_\_\_  
Panorama Investigation ID: \_\_\_\_\_

### A) CLIENT INFORMATION

LHN -> SUBJECT -> CLIENT DETAILS -> PERSONAL INFORMATION

Last Name:	First Name: and Middle Name:	Alternate Name (Goes by):
DOB: YYYY / MM / DD    Age: _____	Health Card Province: _____ Health Card Number (PHN): _____	Preferred Communication Method: (specify - i.e. home phone, text): Email Address: <input type="checkbox"/> Work <input type="checkbox"/> Personal
Phone #: <input type="checkbox"/> Primary Home: <input type="checkbox"/> Mobile contact: <input type="checkbox"/> Workplace:		
Place of Employment/School:	Gender: <input type="checkbox"/> Male <input type="checkbox"/> Female <input type="checkbox"/> Other <input type="checkbox"/> Unknown	
Alternate Contact: _____ Relationship: _____ Alt. Contact phone: _____	Address Type: <input type="checkbox"/> No fixed <input type="checkbox"/> Postal Address <input type="checkbox"/> Primary Home <input type="checkbox"/> Temporary <input type="checkbox"/> Legal Land Description Mailing (Postal address):  Street Address or FN Community (Primary Home):  Address at time of infection if not the same:	

### B) INVESTIGATION INFORMATION

LHN-> SUBJECT SUMMARY-> ENTERIC ENCOUNTER GROUP ->CREATE INVESTIGATION

Disease Summary Classification: CASE	Date	Classification: CONTACT	Date	LAB TEST INFORMATION:
<input type="checkbox"/> Confirmed	YYYY / MM / DD	<input type="checkbox"/> Contact	YYYY / MM / DD	Date specimen collected: YYYY / MM / DD
<input type="checkbox"/> Does Not Meet Case Definition	YYYY / MM / DD	<input type="checkbox"/> Not a Contact	YYYY / MM / DD	Specimen type: <input type="checkbox"/> Biopsy <input type="checkbox"/> Intestinal Fluid <input type="checkbox"/> Stool
<input type="checkbox"/> Person Under Investigation	YYYY / MM / DD	<input type="checkbox"/> Person Under Investigation	YYYY / MM / DD	
<input type="checkbox"/> Probable	YYYY / MM / DD			
<b>Disposition:</b>				
<i>FOLLOW UP:</i>				
<input type="checkbox"/> In progress	YYYY / MM / DD	<input type="checkbox"/> Complete	YYYY / MM / DD	
<input type="checkbox"/> Incomplete - Declined	YYYY / MM / DD	<input type="checkbox"/> Not required	YYYY / MM / DD	
<input type="checkbox"/> Incomplete – Lost contact	YYYY / MM / DD	<input type="checkbox"/> Referred – Out of province	YYYY / MM / DD	
<input type="checkbox"/> Incomplete – Unable to locate	YYYY / MM / DD	(specify where)		
<b>REPORTING NOTIFICATION</b>			Location:	
Name of Attending Physician or Nurse:				
Physician/Nurse Phone number:			Date Received (Public Health): YYYY / MM / DD	
Type of Reporting Source: <input type="checkbox"/> Health Care Facility <input type="checkbox"/> Lab Report <input type="checkbox"/> Nurse Practitioner <input type="checkbox"/> Physician <input type="checkbox"/> Other _____				

## Cyclosporiasis Data Collection Worksheet

Please complete all sections

Panorama Client ID: \_\_\_\_\_  
Panorama Investigation ID: \_\_\_\_\_

### C) SIGNS & SYMPTOMS

LHN-> INVESTIGATION->SIGNS & SYMPTOMS

Description	Yes	Date of recovery	Description	Yes	Date of recovery
	Date of onset			Date of onset	
Abdominal - bloating or distension		YYYY / MMM / DD	Fever - low grade		YYYY / MMM / DD
Cardiac - endocarditis		YYYY / MMM / DD	Flatulence		YYYY / MMM / DD
Asymptomatic		YYYY / MMM / DD	Loss of appetite (anorexia)		YYYY / MMM / DD
Constipation		YYYY / MMM / DD	Nausea		YYYY / MMM / DD
Diarrhea		YYYY / MMM / DD	Pain - abdominal		YYYY / MMM / DD
Diarrhea - watery		YYYY / MMM / DD	Vomiting		YYYY / MMM / DD
Lethargy (fatigue, drowsiness, weakness, etc)		YYYY / MMM / DD	Weight loss		YYYY / MMM / DD
Fever		YYYY / MMM / DD			YYYY / MMM / DD
Other Signs & Symptoms if applicable					

### D) INCUBATION AND COMMUNICABILITY

LHN-> INVESTIGATION->INCUBATION & COMMUNICABILITY

<b>Incubation for Case(period for acquisition):</b>	
<b>Earliest Possible Exposure Date:</b> YYYY / MM / DD	<b>Latest Possible Exposure Date:</b> YYYY / MM / DD
<i>Exposure Calculation details:</i>	

### E) RISK FACTORS N—No, NA—Not asked, U—Unknown

LHN-> SUBJECT->RISK FACTORS

DESCRIPTION	Yes	N, NA, U	Add'l Info
	Start date		
<b>Contact</b> - At risk population (international travellers or immigrants)	YYYY / MM/DD		
<b>Contact</b> - Persons with diarrhea/vomiting	YYYY / MM/DD		
<b>Contact to a known case</b> (add'l info)			
<b>Immunocompromised</b> - Related to underlying disease or treatment			
<b>Special Population</b> - From or residence in an endemic country (add'l info)			
<b>Travel</b> - Outside of within Canada (Add'l Info)	YYYY / MM/DD AE		
<b>Travel</b> - Outside of Saskatchewan, but within Canada (add'l info)	YYYY / MM/DD AE		
<b>Water</b> – Bottled water (specify)			
<b>Water</b> - Private well or system (Add'l Info)			
<b>Water</b> - Public water system (Add'l Info)			
<b>Water</b> - Untreated water (Add'l Info)			
<b>Water (Recreational)</b> - Pond, stream, lake, river, ocean (Add'l Info)	YYYY / MM/DD		
<b>Water (Recreational)</b> - Private (swimming pool/whirl pool) (Add'l Info)	YYYY / MM/DD		
<b>Water (Recreational)</b> - Public (swimming pool/paddling pool/whirl pool) (Add'l Info)	YYYY / MM/DD		

### F) TREATMENT

LHN-> INVESTIGATION-> MEDICATIONS->MEDICATIONS SUMMARY

Medication ( <i>Panorama = Other Meds</i> ) : _____
Prescribed by: _____ Started on: YYYY / MMM / DD



## Cyclosporiasis Data Collection Worksheet

Please complete all sections

Panorama Client ID: \_\_\_\_\_  
Panorama Investigation ID: \_\_\_\_\_

### G) INTERVENTION

LHN-> INVESTIGATION->TREATMENT & INTERVENTIONS->INTERVENTION SUMMARY

Intervention Type and Sub Type:				
<b>Assessment:</b> Investigator name <input type="checkbox"/> Assessed for contacts YYY / MM / DD	<b>Immunization:</b> Investigator name <input type="checkbox"/> Eligible immunizations recommended YYY / MM / DD			
<b>Communication:</b> <input type="checkbox"/> Other communication (See Investigator Notes) YYY / MM / DD Investigator name <input type="checkbox"/> Letter (See Document Management) YYY / MM / DD Investigator name	<b>Public Health Order:</b> <input type="checkbox"/> Order (specify) _____ YYY / MM / DD Investigator name			
<b>General:</b> Investigator name <input type="checkbox"/> Disease-Info/Prev-Control YYY/ MM / DD <input type="checkbox"/> Disease-Info/Prev-Cont/Assess'd for Contacts YYY/ MM / DD	<b>Referral:</b> <input type="checkbox"/> Canadian food inspection agency YYY / MM / DD Investigator name <input type="checkbox"/> Primary care provider YYY/ MM / DD Investigator name <input type="checkbox"/> Consultation with MHO YYY / MM / DD Investigator name			
<b>Education/counselling:</b> <input type="checkbox"/> Prevention/Control measures YYY / MM / DD <input type="checkbox"/> Disease information provided YYY / MM / DD Investigator name	<b>Testing:</b> Investigator name <input type="checkbox"/> Stool testing recommended (e.g. contacts) YYY / MM / DD <input type="checkbox"/> Laboratory testing recommended (contacts) YYY / MM / DD			
<b>Exclusion:</b> Investigator name <input type="checkbox"/> Daycare YYY / MM / DD <input type="checkbox"/> Preschool YYY / MM / DD <input type="checkbox"/> School YYY / MM / DD <input type="checkbox"/> Work YYY / MM / DD	<b>Other Investigation Findings:</b> <input type="checkbox"/> Investigator Notes <input type="checkbox"/> Document Management Notes			
Date	Intervention subtype	Comments	Next follow-up Date	Initials
YYY / MM / DD			YYY / MM / DD	
YYY / MM / DD			YYY / MM / DD	
YYY / MM / DD			YYY / MM / DD	
YYY / MM / DD			YYY / MM / DD	
YYY / MM / DD			YYY / MM / DD	
YYY / MM / DD			YYY / MM / DD	

### H) OUTCOMES

LHN-> INVESTIGATION-> OUTCOMES

<input type="checkbox"/> Not yet recovered/recovering YYY / MM / DD	<input type="checkbox"/> ICU/intensive medical care YYY / MM / DD	<input type="checkbox"/> Hospitalization YYY / MM / DD
<input type="checkbox"/> Recovered YYY / MM / DD	<input type="checkbox"/> Intubation /ventilation YYY / MM / DD	<input type="checkbox"/> Other YYY / MM / DD
<input type="checkbox"/> Fatal YYY / MM / DD	<input type="checkbox"/> Unknown _____	
Cause of Death: (if Fatal was selected) _____		

### I) EXPOSURES

LHN-> INVESTIGATION-> EXPOSURE SUMMARY-> ACQUISITION QUICK ENTRY

Acquisition Event Acquisition Event ID: \_\_\_\_\_

Exposure Name: \_\_\_\_\_

Acquisition Start YYY / MM / DD to Acquisition End: YYY / MM / DD

Location Name: \_\_\_\_\_

**Setting Type**

Travel       Exposure or consumption of potentially contaminated food or water       Most likely source

<b>Initial Report completed by:</b>	<b>Date initial report completed:</b> YYY / MMM / DD
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