Cryptosporidiosis

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Notification Timeline:

From Lab/Practitioner to Public Health: Within 48 hours. From Public Health to Saskatchewan Health: Within 2 weeks. Public Health Follow-up Timeline: Initiate within 24-48 hours.

Information

 Table 1. Surveillance Case Definition¹ (Public Health Agency of Canada, December 2023)

Confirmed Case	 Laboratory confirmation of infection with or without clinical illness from an appropriate clinical specimen (e.g., stool, intestinal fluid or small bowel biopsy), with demonstration of: <i>Cryptosporidium</i> spp. oocysts OR <i>Cryptosporidium</i> spp. nucleic acid (e.g., by polymerase chain reaction (PCR) or other nucleic acid test (NAT)) OR <i>Cryptosporidium</i> spp. antigen (e.g., by an immunologic assay).
Probable Case	Clinical illness [*] in a person who is epidemiologically linked to a confirmed case.
* Clinical illness may be cha	uracterized by diarrhea (often profuse and watery), abdominal pain,

Clinical illness may be characterized by diarrhea (often profuse and watery), abdominal pain, anorexia, fever, nausea, general malaise, dehydration, and/or vomiting. The severity of illness may vary. Asymptomatic infections may occur.

Causative Agent

Cryptosporidium species are oocyst-forming coccidian protozoa. *Cryptosporidium parvum* is the most common species that causes clinical disease in humans. The other species that may cause disease in humans is *Cryptosporidium hominis* (American Academy of Pediatrics, 2009).

Symptoms (Heymann, 2008)



¹ Surveillance case definitions ensure uniform reporting to allow comparability of surveillance data. The definition is not intended to be used for clinical or laboratory diagnosis or management of cases.

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- The major symptom is diarrhea, which may be profuse and watery, preceded by anorexia and vomiting in children. The diarrhea is associated with cramping abdominal pain.
- General malaise, fever, anorexia, nausea and vomiting occur less often.
- Symptoms often wax and wane but remit in less than 30 days in most immunologically healthy people.
- Asymptomatic infections are common and represent a source of infection for others.
- In immunodeficient persons, especially those infected with HIV, who may be unable to clear the parasite, the disease has a prolonged and fulminant clinical course contributing to death.

Incubation Period (American Academy of Pediatrics, 2009)

1-12 days is the likely range, with an average of about 7 days.

Reservoir/Source

Humans, cattle and other domestic animals, including birds and reptiles and occasionally wild animals (American Academy of Pediatrics, 2009).

Mode of Transmission (Heymann, 2008)

- Fecal-oral, including person-to-person, animal-to-person, waterborne and foodborne.
- Oocysts are highly resistant to chemical disinfectants (e.g., chlorine). The parasite infects the intestinal epithelial cells, resulting in oocysts in feces that can survive under adverse environmental conditions for long periods of time.
- Outbreaks in North America and Europe have been associated with contaminated drinking water, bathing in contaminated swimming pools, water parks and lakes, and drinking unpasteurized apple cider that has been contaminated with cow manure.

Risk Groups

Heymann (2008) identifies the following as being prone to infection:

- children under 2 years of age;
- animal handlers;
- travellers;



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- men who have sex with men;
- close personal contacts of infected individuals (families, health care workers and day care workers).

Period of Communicability (Heymann, 2008)

- Oocysts appear in the stool at the onset of symptoms and are immediately infectious upon excretion and continue to be excreted in the stool for several weeks after symptoms subside. Oocysts can remain infective outside the body in a moist environment for 2-6 months.
- In most people, shedding of *C. parvum* stops within 2 weeks, but in immunocompromised individuals, shedding can continue for up to 2 months.

Specimen Collection and Transport

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 <u>http://sdcl-testviewer.ehealthsask.ca</u>.

Methods of Control/Role of Investigator

Prevention and Education

Refer to the <u>Enteric Introduction and General Considerations</u> 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 the public about personal hygiene.
- Ensure adequate sanitation facilities.
- Educate food handlers about proper food and equipment handling and hygiene, especially in avoiding cross-contamination of food products, and emphasize thorough hand washing.
- Ensure drinking water supplies are safe. Avoid drinking untreated and inadequately filtered surface water when camping or traveling in developing



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countries. Chemical disinfectants are not effective; therefore drinking water supplies should be boiled for one minute.

- Educate about the risk of sexual practices that permit fecal-oral contact.
- Contact precautions are recommended for diapered or incontinent children.
- Because cattle are a common source, wash hands thoroughly after contact with cattle or other farm or domestic animals.
- Do not eat or drink unpasteurized milk products.
- Avoid swallowing water when swimming (Heymann, 2008).

Management

I. Case

<u>History</u>

Obtain:

- history of contact with pets, cattle, sheep or domestic animals (including visits to farms or petting zoos);
- history of recent travel and travel to areas with inadequate water or sewage systems;
- history of recent exposure to recreational water (treated or untreated);
- food history including consumption of contaminated food or water, or unpasteurized milk.

Determine:

- water source and sewage disposal if not on a municipal system;
- history of high-risk sexual practices, especially contact with feces;
- history of exposure to day care or institutions.

<u>Immunization</u>

None.

Education

- Provide prevention information and education to case or caregiver, day care or institution workers about personal hygiene.
- Educate about disinfecting diaper changing areas after use by child with diarrhea.
- Advise case to avoid food preparation.



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- Advise case to avoid using public swimming pools and other recreational waters for 2 weeks after symptoms resolve (American Academy of Pediatrics, 2009).
- Long-term asymptomatic carriers should be educated as to proper prevention activities (handwashing techniques, proper fecal disposal), but do not need to be excluded from risk activities.

<u>Treatment/Supportive Therapy</u>

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.
- If the individual is taking immunosuppressive drugs, these should be stopped or reduced wherever possible. The patient is advised to consult with their physician to determine if any change in immunosuppressive drug regime is indicated.

Exclusion

- Food handler, health care, childcare or other staff involved with personal care: exclude until diarrhea is considered to resolved (when stools have been normal for that individual for 48 hours).
- Children below the age of five years in childcare and individuals unable to maintain adequate standards of personal hygiene (i.e., mentally or physically handicapped): exclude until diarrhea has resolved.
- Use of recreational water (e.g., swimming pools, paddling pools, hot tubs): exclude until 2 weeks after symptoms resolve.
- Asymptomatic persons: exclusion is not warranted.

Referrals

- None for healthy individuals.
- Immunocompromised people, especially HIV patients, should be followed by their infectious disease specialist.

II. Contacts/Contact Investigation



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Contact Definition

Contacts include:

- persons living in the household;
- children and childcare workers in a day care/day home;
- individuals exposed to the same source (if it has been identified).

Testing

Symptomatic household members, children and childcare workers in a day care/day home may be required to submit stool samples as part of an outbreak investigation (Heymann, 2008).

Prophylaxis/Immunization

None.

Exclusion

Symptomatic contacts working in high risk occupations should be excluded until diarrhea has resolved. Children and childcare workers in a daycare/dayhome should be excluded from these settings until diarrhea has resolved. Individuals with diarrhea should not use public recreational waters (e.g., swimming pools, lakes, etc.) (American Academy of Pediatrics, 2009). Exclusion is not warranted for asymptomatic persons.

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.²

Institutional Control Measures

• Strict enforcement of infection control measures. Refer to your Health Authority Infection Control Manual.



² <u>http://www.saskatchewan.ca/live/births-deaths-marriages-and-divorces/starting-a-family/early-learning-and-child-care/child-care</u>

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- If the patient is in an institution, hospital or day care/day home, contact precautions in the handling of feces, contaminated clothing and bed linen are to be followed until diarrhea has resolved.
- Contact precautions should be used while case is symptomatic. In the event of a cluster of cases in the institution, food handlers, water source and staff and other attendees may need to be examined (Heymann, 2008).

Epidemic Measures

Epidemiological investigation of clustered cases in an area or institution to:

- determine source of infection and mode of transmission;
- search for common vehicle, such as recreational water, drinking water, raw milk or other potentially contaminated food or drink;
- institute applicable prevention or control measures. Control of person-to-person or animal-to-person transmission requires emphasis on personal cleanliness and safe disposal of feces (Heymann, 2008).

Revisions

Date	Change
April 2024	Surveillance Case Definition table- updated to align with PHAC
	December 2023 updates.



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References

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- Manitoba Health. (2001). *Manitoba communicable disease management protocol: Cryptosporidiosis*. Retrieved March, 2012 from <u>http://www.gov.mb.ca/health/publichealth/cdc/protocol/index.html</u>.
- Public Health Agency of Canada. (December 2023). *National case definition: Cryptosporidiosis*. Retrieved February 2024 from <u>https://www.canada.ca/en/public-health/services/diseases/cryptosporidiosis/health-professionals/national-case-definition.html</u>.





Panorama QA complete: Yes No Initials:

Please complete all sections.

Panorama Client ID: ____

PANORAM

A)	CLIENT INFORMATION

Panorama Investigation ID:

LHN -> SUBJECT -> CLIENT DETAILS -> PERSONAL INFORMATI	ON
--	----

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

Disease Summary Classification: CASE	Date	Classification: CONTACT	Date	LAB TEST INFORMATION: Date specimen collected:
□ Confirmed	YYYY / MM / DD	□ Contact	YYYY / MM / DD	YYYY / MM / DD
Does Not Meet Case Definition	yyyy / MM / DD	Not a Contact	YYYY / MM / DD	Specimen type:
Person Under Investigation	YYYY / MM / DD	Person Under Investigation	yyyy / MM / DD	□ Stool
Probable	YYYY / MM / DD			
In progress Incomplete - Declined Incomplete - Lost contact Incomplete - Unable to locate REPORTING NOTIFICATION Name of Attending Physician or Nu		Complete Not required Referred – Ou (specify where) Location:	YYYY /	MM / DD MM / DD MM / DD
Physician/Nurse Phone number:		Date Received	d (Public Health): YYYY	/ MM / DD

Please complete all sections

Panorama Client ID: Panorama Investigation ID:

C) SIGNS & SYMPTOMS

Description	Yes	Date of	Description	Yes	Date of
	Date of onset	recovery		Date of onset	recovery
Abdominal - cramping	YYYY / MM / DD	YYYY / MM / DD	Loss of appetite (anorexia)	YYYY / MM / DD	YYYY / MM / DD
Asymptomatic	yyyy / MM / DD	YYYY / MM / DD	Malaise	YYYY / MM / DD	YYYY / MM / DD
Diarrhea	yyyy / MM / DD	YYYY / MM / DD	Nausea	YYYY / MM / DD	YYYY / MM / DD
Diarrhea - profuse	yyyy / MM / DD	YYYY / MM / DD	Pain - abdominal	YYYY / MM / DD	YYYY / MM / DD
Diarrhea - watery	yyyy / MM / DD	YYYY / MM / DD	Vomiting	YYYY / MM / DD	YYYY / MM / DD
Fever	yyyy / MM / DD	YYYY / MM / DD		YYYY / MM / DD	YYYY / MM / DD

Exposure Period

1			EXTRONOL FERTOP		
Enter onset date in heavy box. Count backwards to figure prob- able exposure period.	days from onset: calendar dates:		-7 , ,	onset	Most persons shed infectious oocysts in stool during the period of diarrhea. Shed- ding may continue in some patients for several days—possibly longer.
D) INCUBATION AND COMMUN	ICABILITY			LHN-> INVESTIGATIO	N->INCUBATION & COMMUNICABILITY
Incubation for Case(period for a Earliest Possible Exposure Date: Exposure Calculation details:	. ,		Latest	Possible Exposure Date:	yyyy / MM / DD
Communicability for Case (perio Earliest Possible Communicabili		M / DD	Latest	Possible Communicability	Date: YYYY / MM / DD
Communicability Calculation Det	ails:				

E) RISK FACTORS N—No. NA–Not asked. U–Unknown

E) RISK FACTORS N—No, NA–Not asked, U–Unknow DESCRIPTION	Yes	N, NA, U	Start date	LHN-> SUBJECT->RISK FACTORS
Animal Exposure - Farms (Add'l Info)		U	YYYY/MM/DD	
Animal Exposure - Other (Add'l Info)			YYYY/MM/DD	
Animal Exposure - Pet treats and raw food (Add'l Info)			YYYY/MM/DD	
Animal Exposure - Pets (including reptiles) (Add'l Info)			YYYY/MM/DD	
Animal Exposure - Petting zoos/zoos/ special events/ other (Add'l Info)			YYYY / MM/DD	
Animal Exposure - Rodents/rodent excreta			YYYY/MM/DD	
Animal Exposure - Wild animals (other than rodents) (Add'l Info)			YYYY / MM/DD	
Behaviour - Camping/hiking			YYYY/MM/DD	
Contact - Daycare			YYYY/MM/DD	
Contact - Persons with diarrhea/vomiting			YYYY/MM/DD	
Exposure – Diaper changing			YYYY/MM/DD	
Occupation - Child Care Worker			YYYY/MM/DD	
Occupation - Health Care Worker - IOM Risk Factor			YYYY/MM/DD	
Occupation - Personal Care Worker			YYYY/MM/DD	
Sexual Behaviour – MSM +			YYYY/MM/DD	
Sexual Behaviour - Oral-anal			YYYY/MM/DD	
Travel - Outside of within Canada (Add'I Info)	1		YYYY/MM/DD	
Travel - Outside of Saskatchewan, but within Canada (add'l info)				
Water – Bottled water (specify)			YYYY/MM/DD	

Please complete all sections

Panorama Client ID: _____ Panorama Investigation ID: _____

DESCRIPTION	Yes	N, NA, U	Start date	Add'l Info
Water - Private well or system (Add'l Info)			YYYY/MM/DD	
Water - Public water system (Add'l Info)			YYYY/MM/DD	
Water - Untreated water (Add'l Info)			YYYY/MM/DD	
Water (Recreational) - Pond, stream, lake, river, ocean (Add'l Info)			YYYY/MM/DD	
Water (Recreational) - Private (swimming pool/whirl pool) (Add'l Info)			YYYY / MM/DD	
Water (Recreational) - Public (swimming pool/paddling pool/whirl pool) (Add'l Info)			YYYY / MM/DD	

F) USER DEFINED FORM (SEE ATTACHED) LHN-> INVESTIGATION -> INVESTIGATION DETAILS -> LINKS AND ATTACHMENTS -> CRYPTOSPORIDOSIS FORM

LHN-> INVESTIGATION-> MEDICATIONS->MEDICATIONS SUMMARY

Medication (Panorama = Other Meds) :

Prescribed by:_

H) INTERVENTION

Started on: YYYY / MMM / DD

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

Intervention Type a	nu sub Type:				
Assessment:	Investigator name		Exclusion: Investigator name		
□ Assessed for contacts YYYY / MM / DD		Daycare YYYY / MM / DD Preschool School YYYY / MM / DD Work	YYYY / MM / DD YYYY / MM / DD		
Communication:			Public Health Order:		
	ation (See Investigator No	tes) YYYY / MM / DD	□ Order (specify)	YYYY / MM / DD	
Investigator name		2000/ / sess /	Investigator name		
Letter (See Docur Investigator name	ment Management)	YYYY / MM / DD			
General: Investigator	or name		Referral:		
Disease-Info/Prev		YYYY/ MM / DD	Canadian food inspection agency	YYYY / MM / DD	
· · · · · · · · · · · · · · · · · · ·	v-Cont/Assess'd for Contac		Investigator name	, , , – –	
	v-cont/Assess a for Contai		Primary care provider	YYYY/ MM / DD	
			Investigator name		
Education/counselli			Testing: Investigator name		
Prevention/Contr		YYYY / MM / DD	□ Stool testing recommended (e.g. for follow-up)	YYYY / MM / DD	
Disease informat Investigator name	ion provided	yyyy / MM / DD	Laboratory testing recommended	YYYY / MM / DD	
Environmental heal	th: YYYY/ MM / DD		Other Investigation Findings:		
□ Restaurant Inspe] Water system inspection			
Food/Water sampling Food/Water sampling		Investigator Notes Document Management Notes	Document Management Notes		
Investigator name	Р ^{ину} Б —				
Immunization:	Investigator name				
	ations recommended	yyyy / MM / DD			
Date		Comments	Next foll Date	ow-up Initials	
YYYY / MM / DD	subtype			MM / DD	
YYYY / MM / DD			YYYY / M	MM / DD	
YYYY / MM / DD			YYYY / N	MM / DD	
YYYY / MM / DD			YYYY / N	MM / DD	

Please complete all sections

Panorama Client ID: _____ Panorama Investigation ID: _____

I) OUTCOMES				LHN-> IN	IVESTIGATION-> OUTCOMES
 Not yet recovered/recovering Recovered Fatal 	YYYY / MM / DD YYYY / MM / DD YYYY / MM / DD	 ICU/intensive medical care Intubation /ventilation Unknown 	YYYY / MM / DD	_ '	YYYY / MM / DD YYYY / MM / DD
Cause of Death: (if Fatal was seled	cted)				
J) EXPOSURES Acquisition Event Acquisition Event ID:		LHN-> 11	NVESTIGATION-> EXP	OSURE SUMMARY->	ACQUISITION QUICK ENTRY
Exposure Name: Acquisition Start YYYY / MM	/ DD to Acquisition E	ind: YYYY / MM / DD			

Location Name: ____ Setting Type

□ Travel

□ Exposure or consumption of potentially contaminated food or water

Most likely source

Transmission Events		LHN -> INVESTIGATION-> EXPOSURE SUMMARY -> TRANSMISSION EVENT SUMMARY -> QUICK ENTRY			
Transmission Event ID	Exposure Name	Setting type		Date/Time	# of contacts
		□ Health care setting	Food service establishment		
		□ Household	□ Private Function (Food prep)		
		□ Health care setting	□ Food service establishment		
		□ Household	□ Private Function (Food prep)		
		□ Health care setting	Food service establishment		
		□ Household	□ Private Function (Food prep)		
		□ Health care setting	Food service establishment		
		□ Household	□Private Function (Food prep)		
	Crypto Contacts – Inv ID# 	□ Multiple Settings		YYYY / MM / DD to YYYY / MM / DD	

K) TOTAL NUMBER OF CONTACTS

LHN -> INVESTIGATION-> EXPOSURE SUMMARY -> TRANSMISSION EVENT SUMMARY -> TE HYPERLINK -> UNKNOWN/ANONYMOUS CONTACTS

Anonymous contacts: _____ (total number of individuals exposed)

Initial Report	Date initial report completed:
completed by:	YYYY / MMM / DD



Cryptosporidiosis Routine Questionnaire - August 2018

Record type: Record ID: Record Name:

In this form the answers (Yes, Probably, No, and Don't know) are from the perspective of the person being interviewed. "Probably" can be used if the client thinks he/she may have eaten this food or usually eats this food, but is unsure if it was eaten during the period in question.

Diet and Allergies		<mark>≳Show/Hide</mark>
	⊖Yes	
Are you a vegetarian?	⊖ No	
Ale you a vegetaliali :	◯ Don't know	
	◯ Not asked	
	⊖Yes	
Do you have any food Allergies / avoidances / special diet?	⊖ No	
bo you have any loou Allergies / avoluances / special diet?	⊖ Don't know	
	◯ Not asked	
If yes, specify details		

Food Exposures	<mark>∧Show/Hi</mark>	<u>le</u>
In the 12 days prior to onset, did you eat		
	⊖Yes	
	⊖ Probably	
Any raw vegetables (e.g. broccoli, parsley, carrots, green onion)?	⊖ No	
	⊖ Don't know	
	◯ None of the Above	
If yes, specify details (E.g., where consumed, type, brand, location)		
	⊖Yes	
	⊖ Probably	
Any raw fruits (e.g. strawberries, tomatoes)?	⊖ No	
	⊖ Don't know	



	◯ None of the Above
If yes, specify details (E.g., where consumed, type, brand, location)	
	⊖Yes
	○ Probably
Any lettuce or salad?	⊖ No
	◯ Don't know
	\bigcirc None of the Above
If yes, specify details (E.g., where consumed, type, brand, location)	
	⊖Yes
	◯ Probably
Any unpasteurized apple juice/cider?	⊖ No
	◯ Don't know
	○ None of the Above
If yes, specify details (E.g., where consumed, type, brand, location)	
	⊖Yes
Any unpasteurized milk?	⊖ No
	◯ Don't know
	\bigcirc None of the Above
If yes, specify details (E.g., where consumed, type, brand, location)	

Social Functions	Show	<u>/Hide</u>
In the 12 days prior to onset, did you attend any social functions (e.g. parties, weddings, showers, potlucks, community events)?	 ○ Yes ○ No ○ Don't know ○ Not asked 	
Click the Add button to add social event/function details	5	



	Show/Hid
⊖Yes	
⊖ No	
◯ Don't know	
◯ Not asked	
	◯ No ◯ Don't know

Grocery Stores	<mark>∧Show/Hide</mark>
	⊖Yes
In the past 12 days prior to onset, did you visit grocery stores	⊖ No
for foods consumed during the incubation period?	⊖ Don't know
	◯ Not asked
Click the Add button to add grocery store details	
Add	

yalty card/store issued card (for outbreak /estigation only)	Show/Hide
is section is only for use in some specific outbreak uations, with client consent. It is not a routine question sporadic cases.	
s the client given consent (written or verbal)?	
◯ Not applicabl	9
valty card details (names and numbers)	
	3

Interviewer Details and Notes	<mark>≿Show/Hide</mark>
Interviewer Name	



_

Interview date	9/26/2018	
Any special notes regarding this interview		

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