Enteric Illness

Giardiasis

Notification Timeline:

From Lab/Practitioner to Public Health: Immediate.
From Public Health to Ministry of Health: Routine, within 2 weeks.

Public Health Follow-up Timeline: Initiate within 72 hours.

Information

Table 1. Surveillance Case Definition[1] (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: • *Giardia lamblia*§ trophozoites and/or cysts **OR** • *Giardia lamblia*§ nucleic acid (e.g., by polymerase chain reaction (PCR) or other nucleic acid test (NAT)) **OR** • demonstration of *Giardia lamblia*§ antigen (e.g., by an immunologic assay).
Probable Case	Clinical illness* in a person who is epidemiologically linked to a confirmed case.
§*G. lamblia* is synonymous with *G. duodenalis* and *G. intestinalis*. *Clinical illness may be characterized by diarrhea, abdominal pain, nausea, bloating, weight loss, fatigue, gas, dehydration, and/or malabsorption. The severity of illness may vary. Asymptomatic infections may occur.	

Causative Agent

- *Giardia lamblia (G. intestinalis, G. Duodenalis)* – A flagellate protozoan (Heymann, 2015).
- Ingestion of one or more cysts may cause disease (U.S. Food and Drug Administration, 2012).

Symptoms

Heymann (2015) indicates that infection can be:

[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.

- asymptomatic;
- acute, self-limited diarrhea;
- a chronic condition consisting of diarrhea, steatorrhea, abdominal cramps, bloating, loose and pale greasy stools, fatigue, malabsorption of fats and weight loss.

Periods of diarrhea may alternate with constipation until treatment or resolution of symptoms.

Complications
Reactive arthritis may occur.
In severe giardiasis, duodenal and jejunal mucosal cells may be damaged (Heymann, 2015)

Incubation Period
Usually 3-25 days, may be longer. Median 7-10 days (Heymann, 2015).

Reservoir/Source
Humans. Wild and domestic animals (e.g. beavers, cats, dogs, and cattle) (Heymann, 2015).

Mode of Transmission (Heymann, 2015)
Transmission occurs by:

- the fecal-oral route, especially in day cares and institutions;
- ingesting water from unfiltered sources[2] or shallow wells;
- ingesting water from local streams, lakes and recreational pools contaminated by human or animal feces;
- anal sex.

Period of Communicability
During the entire course of infection which can last up to several months (Heymann, 2015). Long term shedding of cysts can occur with asymptomatic carriers.

Specimen Collection and Transport

[2]Concentrations of chlorine used in routine water treatment do not kill *Giardia* cysts, especially when the water is cold.

Stool or small bowel specimens placed in a lab container with SAF preservative. Questionable results from stool specimens can be confirmed by examining duodenal fluid or mucosa for trophozoites.

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.

- Provide prevention information and education to case or caregiver, daycare or institution workers about personal hygiene.
- Educate about disinfecting diaper changing areas after use by child with diarrhea.
- Provide standard letters to schools, daycares, hockey teams, etc.
- Educate food handlers about proper food and equipment handling and hygiene, especially about the avoidance of cross-contamination of food products, and emphasize thorough hand washing.
- Advise to avoid swallowing water from ponds, lakes, or untreated pools.
- Educate about the risk of sexual practices that permit fecal-oral contact.
- Avoid drinking untreated and inadequately filtered surface water (e.g. camping, traveling or wells).

Management

I. Case

History

Investigate exposure to:

- bodies of water (natural and recreational);
- unfiltered, untreated drinking water.

Determine:

- water source and sewage disposal if not on a municipal system;
- history of high-risk sexual practices, especially involving contact with feces;
- history of exposure in daycare or institutional settings.

Education

- Advise case to avoid food preparation until diarrhea has resolved (when stools have been normal for that individual for 48 hours).

- Advise case to avoid using public swimming pools and other recreational waters for 2 weeks after symptoms resolve (American Academy of Pediatrics, 2012).

Immunization
Not applicable.

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/nurse practitioner or, in their absence to the Medical Health Officer. See Appendix H - Sources for Clinical Treatment Guidelines.

Symptomatic cases should be treated. Asymptomatic carriers generally do not need treatment.

Exclusion
- Food handlers, health care, childcare or other staff involved with personal care, children below the age of 5 years in childcare, individuals unable to maintain adequate standards of personal hygiene (e.g., mentally or physically challenged): Exclude until diarrhea has resolved.
- People with diarrhea should not use recreational water for 2 weeks after symptoms resolve. (American Academy of Pediatrics, 2012)
- Diarrhea is considered to be resolved when stools have been normal for that individual for 48 hours.
- Asymptomatic persons: exclusion is not warranted for asymptomatic persons.

Referrals
Refer to public health inspection if source cannot be identified and transmission continues or advice regarding drinking water treatment is required.

II. Contacts/Contact Investigation

Contact Definition
Contacts include:
- persons living in the same household;
- children and childcare workers in a daycare/dayhome;
- sexual contacts.

Testing
All symptomatic household contacts should be referred to their physician for appropriate follow-up.

Prophylaxis/Immunization
Not applicable.

Exclusion
Exclude symptomatic contacts as cases until diagnosis has been ruled out. Asymptomatic contacts, in general, are not excluded (American Academy of Pediatrics, 2012).

III. Environment

Child Care Centres/Institutional Control Measures

- Contact precautions for symptomatic institutionalized individuals (Heymann, 2015).
- Clustered cases in child care and institutional settings require epidemiological investigation to determine source of infection and mode of transmission.

Epidemic Measures

Institute an epidemiological investigation to determine source of infection and mode of transmission for cases clustered by location or institution. A common vehicle should be sought and appropriate measures should be taken to control the situation.

Revisions

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

References

American Academy of Pediatrics. (2012). *Red Book: 2012 Report of the Committee on Infectious Diseases* (29th ed.). Elk Grove Village, IL: Author.

Heymann, D. L., (Ed.). (2015). *Control of Communicable Diseases Manual* (20th ed.). Washington, DC: American Public Health Association.

Public Health Agency of Canada. (December 2023). *National case definition: Giardisis*. Retrieved February 2024 from https://www.canada.ca/en/public-health/services/diseases/giardia-infection/health-professionals/national-case-definition.html.

United States Food and Drug Administration. (2012). *Bad bug book: Foodborne pathogenic microorganisms and natural toxins handbook: Giardia lamblia.* Retrieved April, 2015 from http://www.fda.gov/downloads/Food/FoodSafety/FoodborneIllness/FoodborneIllnessFoodbornePathogensNaturalToxins/BadBugBook/UCM297627.pdf.

Government of Saskatchewan

Giardiasis Data Collection Worksheet

PANORAMA

Please complete **all** sections.

Panorama QA complete: ☐ **Yes** ☐ **No**
Initials:

Panorama Client ID: _____
Panorama Investigation ID: _____

A) CLIENT INFORMATION

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: ☐ Work ☐ Personal
Phone #: ☐ Primary Home: ☐ Mobile contact: ☐ Workplace:		
Place of Employment/School:	Gender: ☐ Male ☐ Female ☐ Other ☐ Unknown	
Alternate Contact: _____ Relationship: _____ Alt. Contact phone: _____	Address Type: ☐ No fixed ☐ Postal Address ☐ Primary Home ☐ Temporary ☐ 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:***
☐ Confirmed	YYYY / MM / DD	☐ *Contact*	YYYY / MM / DD	*Date specimen collected:*
☐ Does Not Meet Case Definition	YYYY / MM / DD	☐ *Not a Contact*	YYYY / MM / DD	*YYYY / MM / DD*
☐ Person Under Investigation	YYYY / MM / DD	☐ *Person Under Investigation*	YYYY / MM / DD	*Specimen type:*
☐ Probable	YYYY / MM / DD			☐ *Fluid* ☐ *Biopsy* ☐ *Stool*

Disposition:
FOLLOW UP:

☐ In progress	YYYY / MMM / DD	☐ Complete	YYYY / MMM / DD
☐ Incomplete - Declined	YYYY / MMM / DD	☐ Not required	YYYY / MMM / DD
☐ Incomplete – Lost contact	YYYY / MMM / DD	☐ Referred – Out of province (Specify where)	YYYY / MMM / DD
☐ Incomplete – Unable to locate	YYYY / MMM / DD		YYYY / MMM / DD

REPORTING NOTIFICATION Name of Attending Physician or Nurse**:**	Location:
Provider's Phone number:	Date Received (Public Health): YYYY / MMM / DD
Type of Reporting Source: ☐ Health Care Facility ☐ Lab Report ☐ Nurse Practitioner ☐ Physician ☐ Other_____	

C) DISEASE EVENT HISTORY

LHN->INVESTIGATION->DISEASE SUMMARY (UPDATE)->DISEASE EVENT HISTORY

Staging: ☐ Acute ☐ Chronic ☐ Carrier

Giardiasis Data Collection Worksheet

Please complete **all** sections

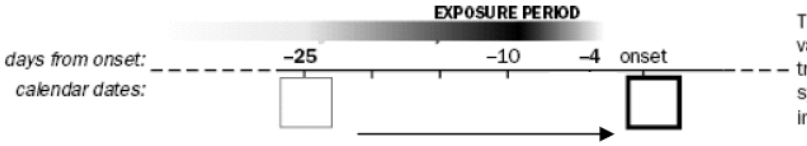
D) SIGNS & SYMPTOMS

LHN-> INVESTIGATION->SIGNS & SYMPTOMS

Description	Yes Date of onset	Date of recovery	Description	Yes Date of onset	Date of recovery
Asymptomatic		YYYY / MMM / DD	Lethargy (fatigue, drowsiness, weakness, etc)		YYYY / MMM / DD
Abdominal - bloating or distension		YYYY / MMM / DD	Pain - abdominal		YYYY / MMM / DD
Abdominal - cramping		YYYY / MMM / DD	Stool - steatorrhea (pale and greasy)		YYYY / MMM / DD
Constipation		YYYY / MMM / DD	Weight loss		YYYY / MMM / DD
Diarrhea		YYYY / MMM / DD			YYYY / MMM / DD
Other Signs & Symptoms if applicable					

Exposure Period

Enter onset date in heavy box. Count back to figure the probable exposure period.



The communicable period is quite variable—weeks to months without treatment. Infected persons without symptoms are more likely to be infectious than those who are sick.

E) INCUBATION AND COMMUNICABILITY

LHN-> INVESTIGATION->INCUBATION & COMMUNICABILITY

Incubation for Case (period for acquisition):
Earliest Possible Exposure Date: YYYY / MM / DD
Latest Possible Exposure Date: YYYY / MM / DD

Exposure Calculation details:

Communicability for Case (period for transmission):
Earliest Possible Communicability Date: YYYY / MM / DD
Latest Possible Communicability Date: YYYY / MM / DD

Communicability Calculation Details:

F) RISK FACTORS N—No, NA–Not asked, U–Unknown

LHN-> SUBJECT->RISK FACTORS

DESCRIPTION	Yes	N, NA, U	Start date	Add'l Info
Animal Exposure - Other (Add'l Info)			YYYY / MM/DD	
Animal Exposure - Pets (including reptiles) (Add'l Info)			YYYY / MM/DD	
Animal Exposure - Rodents/rodent excreta			YYYY / MM/DD	
Animal Exposure - Wild animals (other than rodents) (Add'l Info)				
Behaviour – Camping/hiking				
Contact – Daycare				
Contact – Persons with diarrhea/vomiting			YYYY / MM/DD	
Contact to a known case (Add'l Info)			YYYY / MM/DD	
Exposure – Diaper changing				
Immunocompromised - Related to underlying disease or treatment			YYYY / MM/DD	
Occupation - Child Care Worker	TE		YYYY / MM/DD	
Occupation - Food Handler	TE		YYYY / MM/DD	
Occupation - Health Care Worker - IOM Risk Factor	TE		YYYY / MM/DD	
Occupation – Personal Care Worker				
Other risk factor (Add'l Info)			YYYY / MM/DD	
Special Population - Attends childcare	TE		YYYY / MM/DD	

Giardiasis Data Collection Worksheet

Please complete **all** sections

DESCRIPTION	Yes	N, NA, U	Start date	Add'l Info
Special Population - Attends school	TE		YYYY / MM/DD	
Travel - Outside of Canada (Add'l Info)	AE		YYYY / MM/DD	
Travel - Outside of Saskatchewan, but within Canada (Add'l Info)	AE		YYYY / MM/DD	
Water – Bottled water (Add'l Info)			YYYY / MM/DD	
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/paddling pool/whirl pool) (Add'l Info)			YYYY / MM/DD	

G) USER DEFINED FORM (SEE ATTACHED) LHN-> INVESTIGATION-> INVESTIGATION DETAILS -> LINKS AND ATTACHMENTS -> GIARDIASIS FORM

H) COMPLICATIONS LHN-> INVESTIGATION->COMPLICATIONS

Description	Yes Date of onset	Description	Yes Date of onset
Arthritis - reactive (Reiter's syndrome)	YYYY / MMM / DD	Malabsorption of fats	YYYY / MMM / DD
Other complications			

I) TREATMENT LHN-> INVESTIGATION-> MEDICATIONS->MEDICATIONS SUMMARY

Medication (Antibiotics are contraindicated – refer to physician if on Rx)
(Panorama = Other Meds) : _____

Prescribed by:_____ Started on: YYYY / MM / DD

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

Intervention Type and Sub Type:

Assessment:
☐ Assessed for contacts YYYY/ MM/DD
Investigator name

Public Health Order:
☐ Other (specify) YYYY/ MM/DD
Investigator name

Communication:
☐ Other communication (See Investigator Notes) YYYY / MM / DD
Investigator name
☐ Letter (See Document Management) YYYY / MM / DD
Investigator name

Other Investigation Findings:
☐ Investigator Notes
☐ Document Management

General: Investigator name
☐ Disease-Info/Prev-Control YYYY/ MM / DD
☐ Disease-Info/Prev-Cont/Assess'd for Contacts YYYY/ MM / DD

Referral: Investigator name
☐ Canadian food inspection agency YYYY/ MM/DD
☐ Primary care provider YYYY/ MM/DD

Education/counselling: Investigator name
☐ Prevention/Control measures YYYY/ MM/DD
☐ Disease information provided YYYY/ MM/DD

Testing: Investigator name
☐ Stool testing recommended (e.g. for follow-up) YYYY/ MM/DD

Exclusion: Investigator name
☐ Daycare YYYY/ MM/DD ☐ Preschool YYYY/ MM/DD
☐ School YYYY/ MM/DD ☐ Work YYYY/ MM/DD

Immunization:
☐ Eligible Immunization recommended YYYY/ MM/DD
Investigator name

Giardiasis Data Collection Worksheet

Please complete **all** sections

Date	Intervention subtype	Comments	Next follow-up Date	Initials
YYYY / MM / DD			YYYY / MM / DD	
YYYY / MM / DD			YYYY / MM / DD	
YYYY / MM / DD			YYYY / MM / DD	
YYYY / MM / DD			YYYY / MM / DD	
YYYY / MM / DD			YYYY / MM / DD	
YYYY / MM / DD			YYYY / MM / DD	
YYYY / MM / DD			YYYY / MM / DD	

K) OUTCOMES

LHN-> INVESTIGATION-> OUTCOMES

☐ Not yet recovered/recovering YYYY / MM / DD ☐ ICU/intensive medical care YYYY / MM / DD ☐ Hospitalization YYYY / MM / DD
☐ Recovered YYYY / MM / DD ☐ Intubation /ventilation YYYY / MM / DD ☐ Unknown YYYY / MM / DD
☐ Fatal YYYY / MM / DD ☐ Other _____YYYY / MM / DD

Cause of Death: (if Fatal was selected) _____

L) EXPOSURES

Acquisition Event

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

Acquisition Event ID:_____

Exposure Name: _____

Acquisition Start YYYY / MM / DD to **Acquisition End:** 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 ☐ Household Exposure		
		☐ Health Care setting ☐ Household Exposure		
		☐ Health Care setting ☐ Household Exposure		
		☐ Health Care setting ☐ Household Exposure		
	Giardia Contacts – Inv ID# _____	☐ Multiple Settings	YYYY / MM / DD to YYYY / MM / DD	

M) 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 completed by:

Date initial report completed: YYYY / MM / DD

PANORAMA

Giardiasis 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

Show/Hide

Are you a vegetarian?
- ◯ Yes
- ◯ No
- ◯ Don't know
- ◯ Not asked

Do you have any food Allergies / avoidances / special diet?
- ◯ Yes
- ◯ No
- ◯ Don't know
- ◯ Not asked

If yes, specify details

Food Exposures

Show/Hide

In the perios 3-25 days prior to onset, did you eat…

Any raw vegetables (e.g. spinach, green leaf lettuce, romaine lettuce, green onion, broccoli, carrots)?
- ◯ Yes
- ◯ Probably
- ◯ No
- ◯ Don't know
- ◯ None of the Above

If yes, specify details (E.g., where consumed, type, brand, location)

Any raw fruits (e.g. strawberries, tomatoes)?
- ◯ Yes
- ◯ Probably
- ◯ No
- ◯ Don't know

PANORAMA

◯ None of the Above

If yes, specify details (E.g., where consumed, type, brand, location)

Any fresh herbs (e.g. fresh basil, fresh parsley)?

◯ Yes
◯ Probably
◯ No
◯ Don't know
◯ None of the Above

If yes, specify details (E.g., where consumed, type, brand, location)

Any ready to eat, pre-washed packaged salad (e.g. pre-washed leafy greens in bags or packages; lettuce or leafy greens salad kits with topping and dressing; ready-to-eat salads sold at the grocery store deli counter or fast food restaurant)?

◯ Yes
◯ Probably
◯ No
◯ Don't know
◯ None of the Above

If yes, specify details (E.g., where consumed, type, brand, location)

Social Functions

Show/Hide

In the 3-25 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

Add

Restaurants

Show/Hide

In the 3-25 days prior to onset, did you attend any restaurants (including take-out, cafeteria, bakery, deli, kiosk)?

◯ Yes
◯ No
◯ Don't know
◯ Not asked

Click the Add button to add restaurant details

Add

Grocery Stores

Show/Hide

In the past 3 - 25 days prior to onset, did you visit grocery stores for foods consumed during the incubation period?

- ◯ Yes
- ◯ No
- ◯ Don't know
- ◯ Not asked

Click the Add button to add grocery store details

Add

Loyalty card/store issued card (for outbreak investigation only)

Show/Hide

This section is only for use in some specific outbreak situations, with client consent. It is not a routine question for sporadic cases.

Has the client given consent (written or verbal)?

- ◯ Yes
- ◯ No
- ◯ Not applicable

Loyalty card details (names and numbers)

Interviewer Details and Notes

Show/Hide

Interviewer Name

Interview date 9/26/2018

Any special notes regarding this interview