

Notification Timeline:

From Lab/Practitioner to Public Health: Immediate.

From Public Health to Ministry of Health: Within 3 days (or immediate if an outbreak is suspected or anticipated).

Public Health Follow-up Timeline: Immediate.

Public Health Purpose for Notification of verotoxigenic *E. Coli* (adapted from Massachusetts, 2018)

- To identify whether the case may be a source of infection for other persons (e.g., a diapered child, daycare attendee, or food handler), and if so, to prevent further transmission.
- To identify transmission sources of public health concern (e.g., a restaurant or a commercially distributed food product), and to stop transmission from such sources.
- To monitor the effectiveness of prevention and control measures;
- To make timely and evidence informed actions on outbreaks; and
- To inform the public and medical community about verotoxigenic *E. Coli*.

Surveillance Case Definition¹ (Public Health Agency of Canada, May 2008)

Confirmed Case	Laboratory confirmation of infection with or without clinical illness: <ul style="list-style-type: none"> • isolation of verotoxin producing <i>E. coli</i> from an appropriate clinical specimen (e.g., feces, urine, blood) <p>OR</p> <ul style="list-style-type: none"> • detection of verotoxin antigen or nucleic acid.
Probable Case	Clinical illness ¹ in a person who is epidemiologically linked to a confirmed case, which would include persons with haemolytic uremic syndrome (HUS).
¹ Clinical illness is characterized by diarrhea (often bloody) and abdominal cramps; fever is often absent. Illness may be complicated by haemolytic uremic syndrome (HUS), thrombocytopenic purpura (TTP) or pulmonary edema. Asymptomatic infections may also occur and the microorganism may cause extra-intestinal infections.	

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.

Epidemiology and Occurrence

UNDER CONSTRUCTION

Additional Background Information

Causative Agent

- Verotoxigenic *E. coli* is also referred to as verotoxin-producing *E. coli*, enterohemorrhagic *E. coli* (EHEC), Shiga toxin-producing *E. coli* (STEC) and verocytotoxin-producing *E. coli*.
- The main enterohemorrhagic (EHEC) serotype is *Escherichia coli* O157:H7; this serotype is thought to cause over 90% of cases of diarrhea-associated haemolytic uremic syndrome (HUS) in North America. The other most common serogroups in the US, serotypes such as O26, O111, O103, O45, and O121, have been implicated (Heymann, 2015).
- The infective dose is very low. It may be similar to *Shigella* spp. (as few as 10 organisms by ingestion).

Symptoms

- The illness is characterized by severe cramping, abdominal pain and diarrhea which is initially watery becoming grossly bloody. Occasionally vomiting occurs. Fever is either low-grade or absent.
- The illness is usually self-limited lasting for an average of eight days. Some individuals exhibit watery diarrhea only.
- Some, particularly the very young have developed hemolytic uremic syndrome (HUS), characterized by renal failure, hemolytic anemia and thrombocytopenia. From 8% to 15% of children with *E. coli* O157 exhibit diarrhea and a much smaller proportion of adults develop HUS. HUS develops during the 2 weeks after onset of diarrhea. Fifty per cent of patients require dialysis, and 3% to 5% die.
- Children with diarrhea-associated HUS should be observed for diabetes mellitus during their acute illness, and consideration should be given to long-term screening of survivors for diabetes.

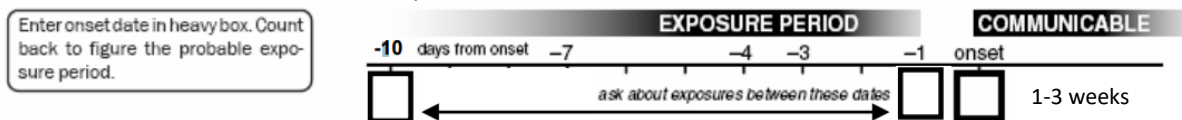
Incubation Period

Typically ranges from 2 to 10 days with a median of 3-4 days (Heymann, 2015).

Period of Communicability

The duration of the excretion of the pathogen is typically a week or less in adults and three weeks in one third of children. Prolonged carriage is uncommon (Heymann, 2015).

Figure 1. Calculating Incubation and Communicability (adapted from British Columbia Center for Disease Control, 2018)



Mode of Transmission

- Through ingestion of contaminated foods, most often inadequately cooked beef (especially ground beef) and also raw (unpasteurized) milk.
- Person-to-person from symptomatic people or carriers.
- Through ingestion of other contaminated foods such as melons, lettuce, fresh spinach, coleslaw, apple cider, alfalfa sprouts, dry-cured salami, game meat, and cheese curds.
- Water-borne transmission has been demonstrated by consuming contaminated drinking water and swimming in contaminated recreational water.
- Petting zoos can be a source of transmission.

Reservoir/Source

- Cattle are the main reservoir of EHEC. Other ruminants including sheep, pigs, goats and deer may also carry the organism. These bacteria can survive for several months in manure and water trough sediments.
- Humans may also serve as a reservoir for person-to-person transmission.
- Undercooked or raw hamburger has been implicated in many documented outbreaks and sporadic cases.
- Contaminated fruits and vegetables (e.g., unpasteurized apple cider, melons, lettuce, and fresh spinach).
- Raw milk has been identified as a vehicle of transmission.

Risk Groups

Individuals most vulnerable to the disease include (Heymann, 2015):

- Children between the ages of 1-4 have the greatest risk of developing HUS;
- Older adults are at greatest risk of death

Those at highest risk of transmitting the infection to others include (Heymann, 2015):

- food handlers;
- health care, child care and other staff involved in personal care;
- children below the age of five years in childcare.

Specimen Collection and Transportation

Stool specimens should be taken early in the course of the illness, when the causative agent is likely to be found in largest numbers. Freshly passed stool is better than rectal swabs, since there is less chance for improper collection, and mucus and blood stained portions can be selected for culture. Use the Cary-Blair transport media. Submit three or four spoonfuls (using the built-in spoon) of liquid stool and mix thoroughly with the semi-solid Cary-Blair transport media. The final mixture should not fill the Cary-Blair container to more than three-quarters full.

Refer to the Roy Romanow Provincial Laboratory Compendium of Tests for details at <https://rrpl-testviewer.ehealthsask.ca/>.

Public Health Investigation

I. Case

Refer to [Attachment – Verotoxigenic *E. Coli* Infection Data Collection Worksheet](#) to assist in follow-up.

History

- Onset of illness – to determine incubation period and period of communicability which helps to identify the possible source and contacts to be followed.
- In the 10 days prior to onset of illness:
 - Identify history of travel (during the incubation period).
 - Exposure to someone else with similar symptoms.
 - Identify potentially contaminated swimming pools and other recreational waters or contaminated drinking water sources.
 - Exposure to farm animals (cattle and other ruminants including sheep, goats and deer) and pets including reptiles and amphibians or pet foods and treats, a petting zoo.
 - Obtain a detailed food history (taking into consideration the incubation period) focusing on foods such as ground beef, unpasteurized cow's milk, grocery produce including melons, lettuce, fresh spinach, coleslaw, apple cider, alfalfa sprouts.
 - Identify others who may have been exposed to the same source.

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- Assess for safe food handling procedures (e.g. possible cross-contamination such as cutting boards).
 - Determine history of daycare or hospital exposure.
 - Determine history of high-risk sexual practices, particularly activities that result in contact with feces.
 - Identify others who may have been exposed to the same source.
 - Assess for history of similar symptoms in visitors or other members of the household.
 - Occupational considerations exist for food handlers, health care and childcare workers.

Public Health Interventions

Assessment

- Assess for [contacts](#) paying particular attention individuals that have had exposure to the same source or are a risk for further transmission.

Communication

- Letters can be used to inform contacts of the exposure, symptom monitoring and when to seek medical attention (see Sample letter)
- Letters can also be used when exclusion from school or work settings are required as a public health intervention.

Education

- All cases should be provided information on prevention and control measures including safe food handling and handwashing.

Exclusion

- Food handlers, health care workers, childcare or other staff involved with personal care: Exclude until diarrhea has resolved **and** two consecutive negative stool cultures are obtained at least 24 hours apart and at least 48 hours after discontinuation of antibiotics (if treatment was provided) (Heymann, 2015).
- Older children and adults unable to maintain adequate standards of personal hygiene (i.e., mentally or physically handicapped): Exclude until 2 negative stool specimens have been obtained. If individual is living in an institution, follow contact precautions until 2 negative stool cultures have been obtained.
- Individuals should be excluded from using recreational water (e.g., swimming pools, whirlpools, etc.) until 2 weeks after symptoms resolve.
- Diarrhea is considered resolved when stools have been normal for that individual for 48 hours.

Public Health Order

- If a food handler, the case should be excluded from work and a Public Health Order issued if necessary.

Referral

- When a food that is commercially available is implicated and is from a federally inspected plant, the Ministry of Health would alert the CFIA. Likewise, when an agricultural source has been identified, the Ministry of Health would alert the Ministry of Agriculture.
- Refer to public health inspection if source cannot be identified and transmission continues.

Testing

- Two consecutive negative stool cultures are required before exclusion requirements can be removed for food handlers, health care and childcare workers or other staff involved with personal care. The specimens must be taken at least 48 hours after antibiotics have stopped and at least 24 hours apart.

Treatment/Supportive Therapy

Treatment for clinical management is at the discretion of the primary care provider.

The following serves as a reference for the public health investigator:

- *Fluid replacement is the cornerstone of treatment for shiga toxin-producing E. coli (STEC) diarrhea.*
- *Reasonable concern exists that some antimicrobial agents increase the risk of HUS, although proof is lacking. Most experts would not use an antimicrobial agent to treat persons with E. coli O157:H7.*

II. Contacts/Contact Investigation**Contact Definition**

Contacts include:

- persons living in the household;
- children and childcare workers in a daycare/dayhome;
- individuals exposed to the same source (if it is identified).

Public Health Interventions**Assessment**

- Assess for symptoms.

Communication

- Follow-up individual contacts in high risk settings and occupations.

Education

- All contacts should be provided information on prevention and control measures including safe food handling and handwashing.

Environmental Health

- If a common exposure is identified through the case and contact investigations, environmental health assessments may be required.

Exclusion

Contacts who are from [risk groups](#):

- If symptomatic: Exclude from patient care, daycare, and food handling until a minimum of two successive negative stool samples are cultured for confirmation. If positive, handle as a case; if negative, allow back to work or daycare when diarrhea has resolved.
 - All symptomatic contacts should avoid handing food to be consumed by others and avoid caring for children in their home until two successive negative stool samples are cultured for confirmation (Heymann, 2015)
- If asymptomatic: Asymptomatic contacts who are from a risk group should be asked to submit one to two stool specimens. If positive, handle as cases. If a contact refuses to submit stool specimen, exclusion may be warranted. This must be evaluated case by case.

Referral

- Depending on the suspected source, investigation/management may involve local Medical Health Officer, Ministry of Health, Public Health Agency of Canada, Ministry of Agriculture, and/or Canadian Food Inspection Agency.

Symptom monitoring

- Contacts should be asked to monitor symptoms during the incubation period and be advised on testing and exclusion if symptoms develop.

Testing

- Symptomatic contacts should be assessed by a physician.
- Submit stool specimens on symptomatic contacts based on risk groups:
 - food handler;
 - health care, childcare or other staff involved with personal care;
 - children below the age of five years in childcare.

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- Two consecutive negative stool cultures are required before exclusion requirements can be removed. The specimens must be taken at least 48 hours after antibiotics have stopped and at least 24 hours apart.

III. Environment

Child Care Centre/Schools Control Measures

- Strict enforcement of infection control measures. Refer to Saskatchewan Ministry of Health Infection Control Manual for Child Care Facilities.²
- For an isolated case, no action is recommended for other children or employees in a daycare. If there are epidemiologically linked cases of *E. coli* in children or employees, stool cultures may be done on all staff and attendees in order to identify positive individuals. Handwashing practices should be thoroughly reviewed. Additional prevention measures should be reviewed and reinforced with staff.

Health Facilities Control Measures

- Strict enforcement of infection control measures. Refer to your Health Authority Infection Control Manual.
- Contact precautions for hospitalized patients.
- For residents of an institution with a case of *E. coli*, institute contact precautions for that case. No action is recommended for other residents. If there are epidemiologically linked cases of *E. coli* in the institution's residents or employees, employees with direct contact and food handlers should be screened for *E. coli*. If cases continue, investigate as an outbreak.

IV. Epidemic Measures

When cases occur among a group of individuals that are known to each other, searching for possible exposures such as travel, or a history of food handling errors, use of unsafe raw ingredients, inadequate cooking, time-temperature abuses and cross-contamination may be the likely source.

² <http://publications.gov.sk.ca/documents/11/96181-infection-control-manual-child-care-centres.pdf>

When two or more cases are linked through genetic identification (such as PFGE or whole genome sequencing), but have not named each other as contacts, the risk of a common source is heightened. In such cases, further investigation is warranted into what and where the potential sources are. Environmental, food sampling and inspection of implicated public facilities (recreational water, restaurants, etc) may be warranted.

When laboratories identify interprovincial or international linkages, the Outbreak Incident Command Center may be activated to coordinate investigation. The Canadian Food Inspection Agency would become involved with the goal to identify the implicated source and implement appropriate interventions such as product recalls to reduce further spread.

- Report at once to the chief medical health officer any group of persons with acute bloody diarrhea, HUS, or thrombotic thrombocytopenic purpura, even in the absence of specific identification of the causal agent.
- Search intensively for the specific vehicle (food, water, animal contact, etc.) by which the infection was transmitted; evaluate potential for ongoing person-to-person transmission; and use the results of epidemiological investigations to guide specific control measures.
- Collaborate with relevant regulatory agencies (such as Canadian Food Inspection Agency) to trace the source of suspected food and recall any implicated product; in large common-source foodborne outbreaks, prompt recall may prevent many cases.
- If a waterborne outbreak is suspected, issue a boil water order and chlorinate suspected water supplies adequately under competent supervision, or do not use them.
- If a swimming-associated outbreak is suspected, close the public pool(s) until chlorinated or shown to be free of fecal contamination. For public beaches, close and collect bacteriological samples. Reopen if samples meet the Canadian Recreational Water Quality Guidelines.
- If a milk-borne outbreak is suspected, pasteurize or boil the milk.
- Education of the public of the importance of handwashing after defecation; provide equipment for proper handwashing with soap and individual paper towels in public venues.

Prevention Measures

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.

Education

- Educate the public and anyone at risk about proper hand washing after defecation and ensure soap and individual paper towels are available.
- Educate about disinfecting diaper changing areas after use by child with diarrhea.
- Advise people to avoid food preparation when experiencing diarrhea.
- Advise case to avoid using public swimming pools and other recreational waters for 2 weeks after symptoms resolve (American Academy of Pediatrics, 2015).
- Hands should be thoroughly washed after handling raw meat, especially hamburger and all surfaces and utensils should be thoroughly cleaned and sanitized (one ounce of bleach per gallon of water) after contact with raw meat to prevent cross contamination.
- Wash fruits and vegetables carefully, particularly if eaten raw. They should preferably be peeled.
- Cook beef adequately, especially ground beef, to an internal temperature of 71 C (160 F). Cooking until all pink colour is gone is not as reliable as using a meat thermometer.
- Protect, purify and chlorinate public water supplies; chlorinate swimming pools. When the safety of drinking water is in doubt, boil it.
- Strengthen control measures for exhibits which allow direct animal contact in public settings, such as fairs, farm tours, and petting zoos, and educate populations at risk about the risks associated with attending such events.
- Ensure adequate hygiene in childcare centres, and encourage frequent handwashing, with soap (Heymann, 2015).

Revisions

Date	Change
September 2018	<ul style="list-style-type: none">• Clarified the purpose for notification of cases to public health• Incorporated an Epidemiology and Occurrence section to the chapter as a placeholder.• Incorporated standardized Verotoxigenic <i>E. Coli</i> Data Collection Worksheet.• Added graphic to help calculate incubation and communicability.• Rearranged and updated the style into the new format of the Manual.• References reaffirmed or updated as necessary.

References

American Academy of Pediatrics. (2015). *Red book: 2015 report of the Committee on Infectious Diseases* (30th ed.). Elk Grove Village, IL: Author.

British Columbia Center for Disease Control (2018). Shigatoxigenic E. coli Case Report Form. Retrieved September, 2018 from http://www.bccdc.ca/resource-gallery/Documents/Guidelines%20and%20Forms/Forms/Epid/Enterics/VTEC_FollowupForm.pdf

Heymann, D. L., (Ed.). (2015). *Control of communicable diseases manual* (20th ed.). Washington, DC: American Public Health Association.

Massachusetts Department of Public Health (2016). Bureau of Infectious Disease and Laboratory Sciences Retrieved September, 2018 from <https://www.mass.gov/doc/shiga-toxin-producing-escherichia-coli-2018/download>

Public Health Agency of Canada. (2008). Case definitions for communicable diseases under national surveillance. *Canada Communicable Disease Report (CCDR)*, 35S2, November 2009. Retrieved September, 2018 from <http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/09vol35/35s2/Verotox-eng.php>.

Verotoxigenic Escherichia Coli Infection Data Collection Worksheet

Please complete all sections.

Panorama Client ID: _____

Panorama Investigation ID: _____

Panorama QA complete: Yes No

Initials: _____

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:	Date	Classification:	Date	LAB TEST INFORMATION:
CASE		CONTACT		<i>Date specimen collected:</i>
<input type="checkbox"/> Confirmed	YYYY / MM / DD	<input type="checkbox"/> Contact	YYYY / MM / DD	YYYY / MM / DD
<input type="checkbox"/> Does Not Meet Case	YYYY / MM / DD	<input type="checkbox"/> Not a Contact	YYYY / MM / DD	<i>Specimen type:</i>
<input type="checkbox"/> Person Under Investigation	YYYY / MM / DD	<input type="checkbox"/> Person Under Investigation	YYYY / MM / DD	<input type="checkbox"/> Blood
<input type="checkbox"/> Probable	YYYY / MM / DD			<input type="checkbox"/> Urine
				<input type="checkbox"/> Stool

Disposition:

FOLLOW UP:

- | | | | |
|--|----------------|---|----------------|
| <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) | |

REPORTING NOTIFICATION

Name of Attending Physician or Nurse:

Location:

Physician/Nurse Phone number:

Date Received (Public Health): YYYY / MM / DD

Type of Reporting Source: Health Care Facility Lab Report Nurse Practitioner Physician Other _____

Verotoxigenic Escherichia Coli Infection Data Collection Worksheet

Please complete all sections

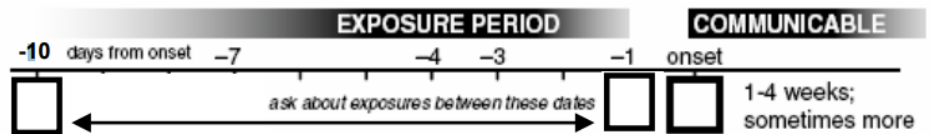
Panorama Client ID: _____
Panorama Investigation ID: _____

C) SIGNS & SYMPTOMS

LHN-> INVESTIGATION->SIGNS & SYMPTOMS

Description	Yes Date of onset	Date of recovery	Description	Yes Date of onset	Date of recovery
Abdominal - cramping	YYYY / MM / DD	YYYY / MM / DD	Hemolytic uremic syndrome (HUS)	YYYY / MM / DD	YYYY / MM / DD
Asymptomatic	YYYY / MM / DD	YYYY / MM / DD	Pain - abdominal	YYYY / MM / DD	YYYY / MM / DD
Dehydration	YYYY / MM / DD	YYYY / MM / DD	Stool - bloody	YYYY / MM / DD	YYYY / MM / DD
Diarrhea - bloody	YYYY / MM / DD	YYYY / MM / DD	Thrombotic thrombocytopenic purpura (TTP)	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
Other Signs & Symptoms if applicable					

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



D) 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
<i>Exposure Calculation details:</i>	
Communicability for Case (period for transmission):	
Earliest Possible Communicability Date: YYYY / MM / DD	Latest Possible Communicability Date: YYYY / MM / DD
<i>Communicability Calculation Details:</i>	

E) 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 - Farms (Add'l Info)			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	
Contact – Persons with diarrhea/vomiting			YYYY / MM/DD	
Contact to a known case (Add'l Info)			YYYY / MM/DD	
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	
Other risk factor (Add'l Info)			YYYY / MM/DD	
Special Population - Attends childcare	TE		YYYY / MM/DD	
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	

Verotoxigenic Escherichia Coli Infection Data Collection Worksheet

Please complete all sections

Panorama Client ID: _____
Panorama Investigation ID: _____

DESCRIPTION	Yes	N, NA, U	Start date	Add'l Info
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)			YYYY / MM/DD	
Water (Recreational) - Public (swimming/paddling pool/whirl pool)			YYYY / MM/DD	

F) USER DEFINED FORM (SEE ATTACHED) LHN-> INVESTIGATION-> INVESTIGATION DETAILS -> LINKS AND ATTACHMENTS -> VEROTOXIGENIC E. COLI FORM

G) 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

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

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

Verotoxigenic Escherichia Coli Infection Data Collection Worksheet

Please complete all sections

Panorama Client ID: _____
Panorama Investigation ID: _____

I) OUTCOMES

LHN-> INVESTIGATION-> OUTCOMES

- | | | | | | |
|---|----------------|---|----------------|--|----------------|
| <input type="checkbox"/> Not yet recovered/recovering | YYYY / MM / DD | <input type="checkbox"/> ICU/intensive medical care | YYYY / MM / DD | <input type="checkbox"/> Hospitalization | YYYY / MM / DD |
| <input type="checkbox"/> Recovered | YYYY / MM / DD | <input type="checkbox"/> Intubation /ventilation | YYYY / MM / DD | <input type="checkbox"/> Unknown | YYYY / MM / DD |
| <input type="checkbox"/> Fatal | YYYY / MM / DD | <input type="checkbox"/> Other _____ | YYYY / MM / DD | | |

Cause of Death: (if Fatal was selected) _____

J) 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
		<input type="checkbox"/> Food service establishment <input type="checkbox"/> Health Care setting <input type="checkbox"/> Public facilities <input type="checkbox"/> Household Exposure		
		<input type="checkbox"/> Food service establishment <input type="checkbox"/> Health Care setting <input type="checkbox"/> Public facilities <input type="checkbox"/> Household Exposure		
		<input type="checkbox"/> Food service establishment <input type="checkbox"/> Health Care setting <input type="checkbox"/> Public facilities <input type="checkbox"/> Household Exposure		
		<input type="checkbox"/> Food service establishment <input type="checkbox"/> Health Care setting <input type="checkbox"/> Public facilities <input type="checkbox"/> Household Exposure		
	VTEC Contacts – Inv ID# _____	<input type="checkbox"/> 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 completed by:

Date initial report completed:
YYYY / MM / DD



VTEC 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 10 days prior to onset, did you eat...

Any beef (not including deli meat)?

- Yes
 Probably
 No
 Don't know
 None of the above

if yes, raw beef?

- Yes
 Probably
 No
 Don't know
 None of the above

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



Any whole cut beef (e.g. steak, roast)

-
-
-
- Yes
-
-
- Probably
-
-
- No
-
-
- Don't know
-
-
- None of the above

If yes, specify details (E.g., steak, roast, other, purchase location)

-
-
-
- Yes
-
-
- Probably
-
-
- No
-
-
- Don't know
-
-
- None of the above

Any stewing beef?

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

-
-
-
- Yes
-
-
- Probably
-
-
- No
-
-
- Don't know
-
-
- None of the above

Any ground beef?

if yes, any any home-made hamburgers?

-
- Yes
-
-
- Probably
-
-
- No
-
-
- Don't know
-
-
- None of the above

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

Any store-bought frozen beef patties?

-
-
-
- Yes
-
-
- Probably
-
-
- No



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

- Don't know
- None of the above

Any other (e.g. store-bought fresh)?

- Yes
- Probably
- No
- Don't know
- None of the above

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

Any other ground beef?

- Yes
- Probably
- No
- Don't know
- None of the above

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

Any ground beef consumed raw or undercooked?

- Yes
- Probably
- No
- Don't know
- None of the above

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

Any pork (not including deli-meat or bacon)?

- Yes
- Probably
- No
- Don't know
- None of the above



If yes, specify type (e.g. ham), purchase location.

Any prepared products containing pork (e.g. spring rolls, dumplings)?

- Yes
- Probably
- No
- Don't know
- None of the above

If yes, specify type (e.g. spring rolls), location purchased

Any deli-meat?

- Yes
- Probably
- No
- Don't know
- None of the above

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

Any sausage?

- Yes
- Probably
- No
- Don't know
- None of the above

Meat type (select all that apply):

- Beef
- Chicken
- Pork
- Turkey
- Other

Preparation type (select all that apply):

- Ready to eat
- Fermented
- Raw

Location purchased:



Any game or country meat (e.g. venison, bison)?

Yes
 Probably
 No
 Don't know
 None of the above

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

Any sprouts including any sprouts on a sandwich or salad?

Yes
 Probably
 No
 Don't know
 None of the above

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

Any lettuce?

Yes
 Probably
 No
 Don't know
 None of the above

If yes, specify types (select all that apply)

Iceberg
 Romaine
 Mesclun

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

Any pre-packaged greens?

Yes
 Probably
 No
 Don't know
 None of the above

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



Any spinach?

Yes
 Probably
 No
 Don't know
 None of the above

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

Any fresh herbs?

Yes
 Probably
 No
 Don't know
 None of the above

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

Any fresh parsley?

Yes
 Probably
 No
 Don't know
 None of the above

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

Any other fresh herbs (e.g. oregano, dill, mint, rosemary, chives, or thyme)?

Yes
 Probably
 No
 Don't know
 None of the above

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

Any melons (e.g. cantaloupe)?

Yes
 Probably
 No



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

- Don't know
- None of the above

Any berries?

- Yes
- Probably
- No
- Don't know
- None of the above

if yes, specify types (select all that apply)

- Strawberries
- Raspberries
- Blueberries
- Blackberries

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

Any unpasteurized fruit juice (e.g. unpasteurized apple cider)?

- Yes
- Probably
- No
- Don't know
- None of the above

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

Any nuts (on their own, in a granola bar, as a garnish, or as part of a dish)?

- Yes
- Probably
- No
- Don't know
- None of the above

If yes, specify type (e.g. almonds) purchase location

- Yes
- Probably



- Any unpasteurized (raw) dairy milk (excluding cheese)?
- No
- Don't know
- None of the above

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

- Any cheese made with unpasteurized (raw) milk?
- Yes
- Probably
- No
- Don't know
- None of the above

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

- Any raw flour used in the household?
- Yes
- Probably
- No
- Don't know
- None of the above

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

- Did you eat, taste, or lick any uncooked or unbaked dough or batter (e.g. cookie dough, cake or muffin batter)?
- Yes
- Probably
- no
- Don't know
- None of the above

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

Food Handling

In the 10 days before onset, of illness did you handle or prepare...

- Yes
- Probably



Any raw beef?

No
 Don't know
 None of the above

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

Any raw pork?

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 10 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 10 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](#)

Yes



In the past 10 days prior to onset, did you visit grocery stores for foods consumed during the incubation period?

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

9/12/2018

Any special notes regarding this interview

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