SHIGA TOXIN-PRODUCING ESCHERICHIA COLI (STEC)

Health Protection Act legislation refers to STEC as VTEC

Case Definition

Confirmed Case[1]:

Laboratory confirmation of infection with or without clinical illness[2]:

- Isolation of Shiga toxin-producing *Escherichia coli* from an appropriate clinical specimen (e.g., stool, blood, urine).
  OR
- Detection of Shiga toxin antigen or nucleic acid in an appropriate clinical specimen (dependent on the test used) using a culture independent diagnostic test (CIDT), such as a nucleic acid test (NAT), or polymerase chain reaction (PCR).

Probable Case[1,3]:

- Clinical illness[1] in a person who is epidemiologically linked to a confirmed case, which would include persons with hemolytic uremic syndrome (HUS);
  OR
- Detection of *E. coli* O157 nucleic acid that is Shiga toxin negative or pending, with or without clinical illness, in an appropriate clinical specimen (i.e., dependent on the test used) using a NAT, such as a PCR.

Clinical Evidence

Clinical illness may be characterized by the following symptoms: Diarrhea (often bloody), severe abdominal pain, vomiting, and less commonly fever. Illness may be complicated by hemolytic uremic syndrome (HUS). The severity of illness may vary. While not considered clinical illness, asymptomatic infections may occur.

Reporting Requirements

Report confirmed and probable cases **immediately** to DHW Surveillance via Panorama and the Surveillance Inbox.

Additional Forms

None.

Data Entry

Generic Food Questionnaire form in the User Defined Forms section in Panorama.

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[1] Culture is required for public health and clinical management, especially when the Shiga toxin type is unknown (i.e., unable to differentiate between *stx1* and *stx2*). Thus, culture must be performed on CIDT/NAT-positive (CIDT+/NAT+) specimens to enable molecular typing (e.g., whole genome sequencing) for surveillance, outbreak detection and response, as per Canadian Public Health Laboratory Network (CPHLN) guidance. An isolate may also be required for antimicrobial susceptibility testing (AST) and/or antimicrobial resistance (AMR) predictions for AMR surveillance.

[2] See Clinical Evidence section.

[3] NAT- positive (NAT+) and culture-negative (culture–) results for *E. coli* O157 would still be considered a probable case.

Additional Comments

- Shiga toxin-producing *E.coli* was formerly known as Verotoxigenic *E.coli* (VTEC) in Nova Scotia.
- STEC includes non-O157 *E. coli*.
- NAT-positive (NAT+) and culture-negative (culture-) results for *E.coli* O157 would still be considered a probable case.
- It is best practice to culture the CIDT positive specimen as soon as possible, such as performing culture in the laboratory that generated the CIDT positive signal. When a specimen is positive using a CIDT, it is strongly advised to collect and document information on all culture results for the specimen (i.e., CIDT+/culture+ vs CIDT+/culture– vs CIDT+/culture not done)
    - Further strain characterization, including serotyping and molecular typing (e.g., whole genome sequencing [WGS]), is required for epidemiologic, public health, and clinical management.
- If more than one target is positive on the gastrointestinal NAT panel, it may be indicative of a cross-reaction, co-infection and/or a single organism harbouring these genes. Reflex culture should be performed to confirm all suspect bacterial NAT signals and to meet requirements for epidemiologic, public health, and clinical management of that organism.
- A small proportion of stx1 positive specimens identified through molecular testing methods could be *Shigella*. Culture should be performed to confirm the identification.