



ESCHERICHIA COLI, SHIGA TOXIN PRODUCING, INCLUDING O157:H7 AND HUS

1. **Agent:** Any *Escherichia coli* serotype that produces shiga-like (vero) toxin including but not limited to O157:H7, O111, O102. Also known as Shiga toxin-producing *E. coli* (STEC), Verocytotoxin-producing *E. coli* (VTEC), and enterohemorrhagic *E. coli* enterohemorrhagic *E. coli*. (EHEC).
 2. **Identification:**
 - a. **Symptoms:** An intestinal infection of varying severity characterized by diarrhea that is often bloody, abdominal cramping, and abdominal pain. Fever, usually not high, is present in less than one-third of patients. Illness may be complicated by the hemolytic uremic syndrome (HUS) or thrombotic thrombocytopenic purpura (TTP). Hemolytic uremic syndrome (HUS) is characterized by the acute onset of microangiopathic hemolytic anemia, renal injury, and low platelet count. Thrombotic thrombocytopenic purpura (TTP) also is characterized by these features but can include central nervous system (CNS) involvement and fever and may have a more gradual onset. Asymptomatic infections occur. Children and the elderly are more often prone to develop severe illness and Hemolytic- uremic syndrome (HUS) than others.
 - b. **Differential Diagnosis:** Other causes of diarrhea, intestinal bleeding, or acute abdominal pain, including infections, neoplasms, appendicitis and other surgical conditions.

Diagnosis: STEC can be identified through culture and serotyping. It can also be identified by enzyme immunoassay (EIA), a method that demonstrates the presence of Shiga-like toxins. The identification of the organism through PCR (Polymerase chain reaction) testing, also known as CIDT (Culture-independent diagnostic test) is also an acceptable form of diagnosis. CIDTs do not need to be “culture confirmed” however it is strongly recommended.
 3. **Incubation period:** Median 3 to 4 days with a range of 1 to 10 days.
 4. **Reservoir:** Cattle, possibly other ungulates (any animal with hooves) such as deer, sheep cattle, and pigs; humans may serve as a reservoir for person-to-person transmission.
 5. **Source:** Feces of infected animals and persons; undercooked beef products (primarily ground beef); unpasteurized milk; contaminated produce, drinking water supply and recreational water exposure.
 6. **Transmission:** Ingestion of contaminated food, milk or water; also, directly person-to-person in households, daycare, and long-term care facilities.
 7. **Communicability:** Variable as long as organisms excreted, usually 1 to 3 weeks.
 8. **Specific Treatment:** Supportive; replacement of fluids and electrolytes. Role of antibiotics is controversial. There is some evidence to suggest that treatment with trimethoprim-sulfamethoxazole (TMP-SMX) may increase risk of HUS or TTP.
 9. **Immunity:** Unknown.
- ## REPORTING PROCEDURES
1. **Reportable:** (Title 17, Section 2500, *California Code of Regulations*.) Report immediately by telephone of a case or suspected case to ACDC and Morbidity Unit. Bacterial isolates must be forwarded to LA County Public Health Laboratory for confirmation.
 2. **Report Form:** **E. Coli O157, OTHER STEC, SHIGA TOXI POSITIVE FECES, AND/OR HUS CASE REPORT (CDPH 8555)**

Supplemental food history forms at request of ACDC.
 3. **Epidemiologic Data:**



- a. Specific food history within 7 days prior to onset, including place of purchase (e.g., poorly cooked ground beef products, unpasteurized dairy products, unpasteurized apple cider and juice, melons, lettuce and sprouts).
- b. Specific restaurant history 7 days prior to onset. Give name and location of restaurant(s).
- c. Exposure to others with diarrhea in or outside of household.
- d. Contact with farm animals before onset.
- e. Contact to a child care center or institution.
- f. Recreational water exposures.
- g. Travel up to 3 weeks prior to onset.
- h. Occupation.

CONTROL OF CASE, CONTACTS & CARRIERS

Public Health Nursing Home Visit Protocol:
Home visit as necessary – a face to face interview is conducted as necessary.

Refer to “Public Health Nursing Home Visit AS NECESSARY (HVN) Algorithm” (B-73 Part IV Public Health Nursing Home Visit Protocol).

CASE:

Investigate within 24 hours.

1. **Precautions:** Enteric precautions until clinical recovery.
2. **Sensitive Occupation or Situation:** Remove from work until 2 successive negative feces specimens are obtained, at least 24 hours apart and taken at least 48 hours after cessation of antimicrobial therapy.
3. **Non-sensitive Occupation or Situation:** No restrictions unless symptomatic.

CONTACTS:

Household members or persons who share a common source.

1. Sensitive Occupation or Situation:

- a. **Symptomatic:** Remove from work until negative specimens as for case.
- b. **Asymptomatic:** No restrictions.

2. Non-Sensitive Occupation or Situation:

Obtain stool specimen if symptomatic.

PREVENTION-EDUCATION

1. Thoroughly cook beef, especially ground beef, to an internal temperature of 155°F (68°C) until center is no longer pink and juices run clear.
2. Avoid the use of unpasteurized milk or other products.
3. Avoid cross-contamination of other foods. All utensils, including chopping board, that have been in contact with raw meat should be washed before using for preparation of other food. After working with raw meat, the hands should be washed before preparing other foods.
4. Instruct family members about the importance of frequent hand washing with soap and water, especially after using the bathroom, disposal of soiled diapers and human waste, and before preparation of food and beverages.

DIAGNOSTIC PROCEDURES

1. Microscopic:

Container: Enteric.

Laboratory Form: [Test Requisition Form H-3021 \(Rev. 01/14\)](#)

Examination Requested: *E. coli* O157: H7, including other entero-hemorrhagic *E. coli*.

Material: Feces. Follow instructions provided with container.



Storage: Protect from overheating. Maintain at room temperature.

Remarks: Mark "SOS" (sensitive occupation or situation) in red on container if appropriate.

2. **Culture for Identification (CI):**

Container: Enteric CI.

Laboratory Form: Test Requisition Form H-3021.

Material: Pure culture on sorbitol-containing medium.

Storage: Same as above.