

***E. Coli* O157:H7 INFECTION and HUS**

1. **Agent:** *Escherichia coli* serotype O157:H7, a strain producing Shiga-like (vero)toxin; other (enterohemorrhagic *E. coli* [EHEC]) serotypes are also known to cause disease in humans.
2. **Identification:**
 - a. **Symptoms:** An intestinal infection of varying severity characterized by diarrhea that is often bloody, and cramping abdominal pain. Fever, usually not high, is present in fewer than one-third of patients. Illness may be complicated by the hemolytic uremic syndrome (HUS) or thrombotic thrombocytopenic purpura (TTP); other organisms also may cause HUS. Asymptomatic infections occur. Children and the elderly are often more severely affected.
 - b. **Differential Diagnosis:** Other causes of diarrhea, intestinal bleeding, or acute abdominal pain, including infections, neoplasms, appendicitis and other surgical conditions.
 - c. **Diagnosis:** *E. coli* O157:H7 can be identified from a clinical specimen by its inability to ferment sorbitol in special media (sorbitol-MacConkey [SMAC]), by serotyping, by DNA probes that identify the toxin genes or virulence plasmid, and by demonstrating presence of Shiga-like toxin. A special laboratory request is usually required.
3. **Incubation:** Median 3-4 days with a range of 12 hours to 10 days.
4. **Reservoir:** Cattle, possibly other ungulates such as deer; 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, day-care, and long-term care facilities.
7. **Communicability:** Variable as long as organisms excreted, usually 1-3 weeks.
8. **Specific Treatment:** Supportive; replacement of fluids, 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*). Telephone report of case or suspect to ACDC and Morbidity Unit.

2. **Report Form:**

CASE ALERT FORM: HEMOLYTIC UREMIC SYNDROME (HUS) SURVEILLANCE (DHS 8609, 09/00 fillable). ACDC to complete and submit to State directly upon initial CMR.

CASE REPORT: *E. COLI* O157:H7 ONLY/ OTHER STEC ONLY/HEMOLYTIC UREMIC SYNDROME ONLY/ BOTH *E.COLI* AND HUS/BOTH OTHER STEC AND HUS (DHS 8555, 12/01 fillable). ACDC to complete and submit at conclusion of investigation.

Supplemental food history forms at request of ACDC.

If a prepared commercial food item is the LIKELY source of this infection, a **FOODBORNE INCIDENT REPORT** should be filed. For likelihood determination and filing procedures, see Part 1, Section 7 - Reporting of a Case or Cluster of Cases Associated with a Commercial Food: Filing of Foodborne Incident Reports.

3. **Epidemiologic Data:**

- a. Specific food history within 7 days prior to onset, including place of purchase (e.g., poorly cooked 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 exposure.

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- g. Travel up to 3 weeks prior to onset.
- h. Occupation.

- 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.

CONTROL OF CASE, CONTACTS & CARRIERS

Investigate within 24 hours.

CASE:

- 1. **Precautions:** Enteric precautions until clinical recovery.
- 2. **Sensitive Occupation or Situation (SOS):** 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:** Release after clinical recovery unless household contact in SOS. Then release after obtaining 2 negative feces specimens as for case in SOS.

CONTACTS: Household members or persons who shared a common source.

- 1. **Sensitive Occupation or Situation:**
 - a. Symptomatic: Remove from work until 2 negative specimens as for case. Then weekly negative specimens until case released or contact with case broken.
 - b. Asymptomatic: Consult with ACDC.
- 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.

DIAGNOSTIC PROCEDURES

1. Culture:

Container: Enterics.

Laboratory Form: Test Requisition and Report Form H-3021 or online request if electronically linked to the Public Health Laboratory.

Examination Requested: *E. coli* O157:H7, Enterohemorrhagic *E. coli*.

Material: Feces.

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 and Report Form H-3021 or online request if electronically linked to the Public Health Laboratory.

BACTERIOLOGICAL CULTURE FOR IDENTIFICATION (CSDH H-2229).

Material: Pure culture on sorbitol-containing medium.

Storage: Same as above.