

Epidemiology

- A Shiga-toxin producing *E. coli* that is transmitted by food or water contaminated with feces from cattle, other ruminants, or humans. It can also be spread through the oral-fecal route directly from infected people.
- Incubation period after ingestion averages 3-4 days with a range of 1-10 days.

Clinical Presentation

- Diarrhea that may become bloody. Severe abdominal pain is typical. Fever occurs in less than one third of cases.
- Hemolytic-uremic syndrome (HUS) occurs in 8% of children with *E. coli* O157:H7 diarrhea and in some adults. HUS develops during the 2 weeks after onset of diarrhea; 50% of patients require dialysis and 3-5% die.
- Thrombotic thrombocytopenic purpura may occur in adults after *E. coli* O157:H7 diarrhea. Additional symptoms in adults can include fever and neurologic abnormalities.

Differential Diagnosis

- Gastroenteritis due to *Salmonella* spp., *Shigella* spp., *Campylobacter* spp., *Yersinia enterocolitica*, *Vibrio cholerae*, *V. parahaemolyticus*, *Clostridium difficile*, other pathogenic *E. coli*, viruses, or parasites.

Diagnostic Tests

- Stool culture. Send sorbitol-negative *E. coli* or Shiga-toxin producing *E. coli* to Arizona Public Health Laboratory ("the State Lab") to test for serotype *E. coli* O157:H7.
- Some laboratories screen first for Shiga-toxin producing *E. coli* by enzyme-linked immunoassay. If positive, further testing is needed. (All *E. coli* O157:H7 produce Shiga-toxin, but not all Shiga-toxin producing strains are *E. coli* O157:H7.)
- Complete blood count with differential, glucose, BUN, and creatinine in confirmed cases of *E. coli* O157:H7.
- Children with diarrhea-associated HUS should be observed for diabetes mellitus during their acute illness.

Infection control

- Patients infected with *E. coli* O157:H7 should not handle food or provide child or patient care until diarrhea resolves and results of 2 consecutive stool cultures obtained at least 24 hours apart (and \geq 48 hours off of antibiotics) are negative for *E. coli* O157:H7.
- For hospitalized patients with *E. coli* O157:H7, use standard precautions (i.e. gloves and gown for contact with stool). For diapered or incontinent patients, use contact precautions for duration of illness.

Treatment

- Prevent or correct dehydration and electrolyte abnormalities.
- Avoid antimotility agents in inflammatory or bloody diarrhea.
- Antibiotic therapy has no proven benefit for diarrhea caused by *E. coli* O157:H7.
- The risk of HUS is low if no laboratory evidence of hemolysis, thrombocytopenia, or nephropathy occurs within 3 days after resolution of diarrhea.

Notify your local or county health department of confirmed or suspected cases of hemorrhagic *E. coli* diarrhea.

Sources

1. American Academy of Pediatrics. *Escherichia coli* diarrhea. In: Pickering LK, Baker CJ, Long SS, McMillan JA, eds. Red Book: 2006 Report of the Committee on Infectious Diseases. 27th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2006:291-295.
2. Heyman DL. Diarrhea caused by *Escherichia coli*. Control of Communicable Diseases Manual, 18th ed. American Public Health Association. 2004: 160-171.
3. Garner JS. Guideline for isolation precautions in hospitals. The Hospital Infection Control Practices Advisory Committee. Infect Control Hosp Epidemiol. 1996;17:53-80.