



## ***Escherichia coli* O157:H7 - Technical Information**

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| <b>Clinical Features</b> | Acute bloody diarrhea and abdominal cramps with little or no fever; usually lasts 1 week.  |
| <b>Etiologic Agent</b>   | <i>Escherichia coli</i> serotype O157:H7. Gram-negative rod-shaped bacterium producing Shiga toxin(s).   |
| <b>Incidence</b>         | An estimated 73,000 cases occur annually in the United States. Uncommonly reported in patients in less industrialized countries.   |
| <b>Sequelae</b>          | Hemolytic uremic syndrome (HUS): Persons with this illness have kidney failure and often require dialysis and transfusions. Some develop chronic kidney failure or neurologic impairment (e.g., seizures or stroke). Some have surgery to remove part of the bowel. Estimated 61 fatal cases annually; 3-5% with HUS die.  |
| <b>Costs</b>             | Estimated 2,100 hospitalizations annually in the United States. The illness is often misdiagnosed; therefore, expensive and invasive diagnostic procedures may be performed. Patients who develop HUS often require prolonged hospitalization, dialysis, and long-term follow-up.  |
| <b>Transmission</b>      | Major source is ground beef; other sources include consumption of unpasteurized milk and juice, sprouts, lettuce, and salami, and contact with cattle. Waterborne transmission occurs through swimming in contaminated lakes, pools, or drinking inadequately chlorinated water. Organism is easily transmitted from person to person and has been difficult to control in child day-care centers. |
| <b>Risk Groups</b>       | All persons. Children <5 years old and the elderly are more likely to develop serious complications.   |
| <b>Surveillance</b>      | <i>E. coli</i> O157:H7 infection is nationally reportable and is reportable in most U.S. states. HUS is also reportable in most states.  |
| <b>Trends</b>            | Since the first description of this illness in 1982, infections have been reported from >30 countries on six continents. The use of subtyping by pulsed-field gel electrophoresis and comparison of patterns by PulseNet has increased the ability to identify outbreaks.  |

**Challenges** Developing farm and slaughterhouse-based methods to decrease contamination of meat; encouraging use of irradiation to increase the safety of ground beef; identifying ways to prevent contamination of foods eaten raw (e.g., produce); educating the U.S. public to cook ground beef thoroughly, preferably using a digital instant-read thermometer; convincing clinical laboratories to screen for *E. coli* O157:H7 in stools from persons with bloody diarrhea; conducting population-based surveillance for HUS and determining which serotype of Shiga toxin-producing *E. coli* was responsible for illness; identifying other vehicles of transmission; developing an international network for subtyping and communicating about outbreaks.

**Opportunities** Learning more about the ecology of this organism in cattle and other ruminants may help in devising methods to decrease its prevalence in food animals. Learning how this pathogen contaminates produce items could lead to measures that would increase their safety. Decreasing the incidence of these infections would decrease HUS, the major cause of kidney failure in children in the United States. Transmission in day-care centers highlights need for better infection-control practices.

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