

E. coli O157:H7 and other Shiga toxin–producing *E. coli* (STEC)

What is *Escherichia coli* O157:H7?

E. coli O157:H7 is one of hundreds of strains of the bacterium *Escherichia coli*. Although most strains are harmless and live in the intestines of healthy people and animals, some kinds of *E. coli* can cause disease by making a toxin called Shiga toxin. The bacteria that make these toxins are called “Shiga toxin–producing” *E. coli*, or STEC for short. The most commonly identified STEC in North America is *E. coli* O157:H7. *E. coli* O157:H7 is an emerging cause of foodborne illness. An estimated 73,000 cases of infection and 61 deaths occur in the United States each year. In addition to *E. coli* O157:H7, several other types of STEC can cause illness similar.

Who gets STEC infection?

Anyone of any age can become infected with STEC, but children are more likely to develop serious complications.

What are the symptoms of STEC infection?

Symptoms of STEC infection often can include fever, abdominal cramps, vomiting, and sometimes bloody diarrhea, called hemorrhagic colitis. Most people recover within 10 days. However, in a small proportion of patients, particularly young children and the elderly, the infection can result in life-threatening complications, such as hemolytic uremic syndrome (HUS), which

is characterized by the destruction of red blood cells and kidney failure. Transfusions of blood or blood clotting factors as well as kidney dialysis may be necessary. A prolonged hospital stay is often required. Fortunately, most people with HUS recover completely, but it can be fatal.

How does someone become infected with STEC?

The main reservoir for STEC is cattle. It is transmitted to humans principally through consumption of contaminated foods, such as raw or undercooked ground meat products and raw milk. Fecal contamination of water and other foods, as well as cross-contamination during foodpreparation, will also lead to infection. Examples of foods implicated in outbreaks of STEC include hamburgers, fresh-press (non-pasteurized) apple cider, yogurt, cheese, and dried cured salami. *E. coli* can also grow on salad vegetables, such as spinach and lettuce. The time between ingesting the STEC bacteria and feeling sick is usually 3–4 days after the exposure, but may be as short as 1 day or as long as 10 days.

How soon after exposure to STEC do symptoms appear?

The symptoms usually appear about three days after exposure, with a range of one to nine days.

How is infection with STEC diagnosed?

Infection with STEC is diagnosed by examination and testing of a patient's stool specimen.

What is the treatment for infection with STEC?

Most people recover without specific treatment in five to 10 days. Antibiotics should not be used for the treatment of STEC infection. Studies have shown that an increase in complications has been associated with the use of antibiotics in the treatment of this particular infection. Antidiarrheal agents may also increase the risk of complications.

How can infection with STEC be prevented?

- Do not eat undercooked hamburger or other ground beef products, as these are the most likely to be contaminated.
- Cook all ground beef and hamburger thoroughly to an internal temperature of 160°F.
- Make sure the cooked meat is brown throughout (not pink), and the juices run clear. It's best to use a thermometer, because color is not a very reliable indicator of "doneness."
- Avoid spreading harmful bacteria in the kitchen by keeping raw meat separate from ready-to-eat foods.
- Wash hands, counters, and utensils with hot soapy water after they touch raw meat.
- Never place cooked hamburgers or ground beef on the unwashed plate that held raw meat.
- Thaw frozen meat, fish, and poultry thoroughly before cooking to ensure that they are sufficiently cooked in the center.
- Since cooling foods to room temperature allows microbes to proliferate, eat cooked foods as soon as they come off the heat.
- Drink only pasteurized milk and milk products, juice, or cider.

- Wash fruits and vegetables thoroughly, especially those that will not be cooked.
- Children under 5 years of age, immunocompromised persons, and the elderly should avoid alfalfa sprouts unless their safety can be assured.
- Avoid swallowing lake or pool water while swimming.
- Make sure people with diarrhea, especially children, wash their hands carefully after using the toilet to reduce the risk of spreading disease.

For specific concerns about STEC, call the New Hampshire Department of Health and Human Services, Communicable Disease Control Section at 603-271-4496 or 800-852-3345 x4496. For further information, refer to the Centers for Disease Control and Prevention website at www.cdc.gov.