

Shiga Toxin - Producing E. Coli, including E. coli OH157:H7

What is E. coli?

Escherichia coli (*E. coli*) are bacteria commonly found in the digestive tracts of humans and animals, where they make up part of the normal bacteria of the intestine. Though most of these bacteria are harmless, others can cause serious illness. Some kinds of *E. coli* cause illness by making a toxin called Shiga toxin. These bacteria are called Shiga toxin-producing E. coli or STEC for short.

What are the symptoms of infection with STEC?

- Mild to severe diarrhea
 - In more severe cases, the diarrhea may contain blood.
- Stomach cramps and vomiting may occur, but fever is usually without fever.
- 5-10% of people that are diagnosed with STEC disease develop a life-threatening condition called hemolytic uremic syndrome (HUS), a condition in which red blood cells are destroyed and the kidneys fail.
 - Clues that a person is developing HUS include decreased frequency of urination
 - feeling very tired
 - losing pink color in their cheeks and inside the lower eyelids
 - Persons with HUS are usually hospitalized because their kidneys may stop working and they may develop other serious problems. Most persons with HUS recover within a few weeks, but some suffer long term damage or loss of life. P
- People of all ages can experience illness due to STEC; however, children under 5 years of age and the elderly are more likely to experience severe illness due to STEC as well as HUS.

How is STEC spread?

E. coli and other strains of STEC, live in the guts of ruminant animals such as cattle, goats, sheep, and deer. Cattle are the main source for STEC, with up to 50-80% of cattle herds carrying the bacteria. STEC that cause human illness usually do not make animals sick so a healthy animal may be infected. Direct or indirect contact with the feces of these animals can result in infection. Infection may also occur after eating undercooked ground beef, drinking contaminated raw milk, swimming in, or drinking contaminated water, or by consuming foods or mouthing objects that have been contaminated with feces of an infected animal. Infection can also occur during hand-to-mouth activities like eating or drinking while in petting zoos and other animal exhibits such as livestock barns and arenas. Person-to-person transmission can occur if people with STEC disease do not wash their hands after using the toilet or if people do not wash their hands after changing diapers of a child with STEC.

How soon after infection do symptoms occur?

The time between ingesting STEC bacteria and beginning symptoms can be anywhere from 1 to 10 days, but symptoms usually occur within 3 to 4 days.

How long can an infected person spread the bacteria?

STEC is spread in the feces of sick adults for about one week but can be passed in the feces of sick children for up to three weeks.

Should people sick with STEC stay home from work, school, or day care?

People who have had diarrhea due to an STEC infection may safely return to work when they have normal stools for at least 24 hours. Persons working in food services, in a childcare center, or in direct patient care must not work while they have diarrhea. Children should not attend a childcare center with diarrhea. Those in food service, childcare centers or health care settings who have been diagnosed with an STEC infection will be excluded from those settings until diarrhea has ceased AND two stool cultures submitted at least 24 hours apart have tested negative for STEC. A public health nurse from the local county health department will coordinate the stool specimen collection and testing.

What is the treatment for STEC infection?

Non-specific supportive therapy, including hydration, is important. Most persons recover without specific treatment in 5-10 days. Antibiotics are not recommended as there is no evidence that antibiotics improve the course of disease, and there is some evidence that treatment with antibiotics may increase the risk of HUS. Antidiarrheal agents should also be avoided, as they may also increase the risk of HUS. Individuals who experience symptoms of illness like STEC should contact their health care provider.

What can be done to prevent an STEC infection?

- Know your chances of getting food poisoning. People with higher chances for foodborne illness are pregnant women, newborns, children, older adults, and those with weak immune systems, such as people with cancer, diabetes, or HIV/AIDS.
- Practice proper hygiene, especially good handwashing.
 - Wash your hands thoroughly after using the bathroom and changing diapers.
 - Wash your hands thoroughly before and after preparing or eating food and preparing or feeding bottles to an infant or toddler.
 - Keep all objects that enter infants' and toddlers' mouths (such as pacifiers and teethingers) clean.
 - Wash your hands thoroughly after contact with animals or their environments (at farms, petting zoos, fairs, even your own backyard).
 - If soap and water aren't available, use an alcohol-based hand sanitizer with at least 60% alcohol (check the product label to be sure). These alcohol-based products can quickly reduce the number of germs on hands in some situations, but they are not a substitute for washing with soap and running water.
- Follow the four steps to food safety when preparing food.
- Wash fruits and vegetables well under running water.
- Cook meats thoroughly:
 - To kill harmful germs, cook beef steaks and roasts to an internal temperature of at least 145°F (62.6°C) and allow to rest for 3 minutes after you remove meat from the grill or stove.
 - Cook ground beef and pork to a minimum internal temperature of 160°F (70°C).
 - Always use a food thermometer to check that the meat has reached a safe internal temperature because you can't tell whether meat is safely cooked by looking at its color.
- Don't cause cross-contamination in food preparation areas. Thoroughly wash hands, counters, cutting boards, and utensils after they touch raw meat.
- Avoid raw milk, unpasteurized dairy products, and unpasteurized juices (such as fresh apple cider).
- Don't swallow water when swimming and when playing in lakes, ponds, streams, swimming pools, and backyard "kiddie" pools.