

## Shiga toxin-producing *E. coli* (STEC)

### What are Shiga toxin-producing *E. coli* (STEC)?

*E. coli* are bacteria that normally live in the intestines of humans and animals. Although most strains of this bacteria are harmless, several are known to produce toxins that can cause illness. Some kinds of *E. coli* 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. One of these is the *E. coli* strain called O157:H7 which can cause severe diarrhea and kidney damage. *E. coli* O157:H7 is quite hardy and can survive for extended periods in water and soil, under frozen and refrigerated temperatures, and in dry conditions. The organism is destroyed by thorough cooking or pasteurization.

### How does one get infected with Shiga toxin-producing *E. coli* or STEC?

Anyone of any age can become infected, but children and the elderly are more likely to develop serious complications. Infections start when you swallow STEC—in other words, when you get tiny (usually invisible) amounts of human or animal feces in your mouth. Unfortunately, this happens more often than we would like to think about.

Exposures that result in illness include consumption of contaminated food, consumption of unpasteurized (raw) milk, consumption of water that has not been disinfected, contact with cattle, or contact with the feces of infected people. Some foods are considered to carry such a high risk of infection with *E. coli* O157 or another germ that health officials recommend that people avoid them completely. These foods include unpasteurized (raw) milk, unpasteurized apple cider, and soft cheeses made from raw milk.

Sometimes the contact or contamination with STEC is pretty obvious (working with cows at a dairy or changing diapers, for example), but sometimes it is not (like eating an undercooked hamburger or a contaminated piece of lettuce). Exposure to animal feces in the environment, such as recreational fields or parks contaminated with elk/deer or other animal feces are also a possible source of contamination. In addition, people have become infected by swallowing lake water while swimming, touching the environment in petting zoos and other animal exhibits and then not washing hands carefully, and by eating food prepared by people who did not wash their hands well after using the toilet. Almost everyone has some risk of infection.

### What are the symptoms of STEC infection?

People infected by shiga producing *E. coli* (STEC) can develop a range of symptoms. Some infected people may have mild diarrhea or no symptoms at all. Most identified cases develop severe diarrhea and abdominal cramps. Blood is often seen in the stool. Usually little or no fever is present. In some people, particularly children under five years of age, the infection can cause a complication called hemolytic uremic syndrome (HUS).

Around 5–10% of those who are diagnosed with STEC infection develop a potentially life-threatening complication known as hemolytic uremic syndrome (HUS). This is a serious disease in which red blood cells are destroyed and the kidneys fail.

**Anyone experiencing any of the above symptoms should seek medical attention immediately. It is important to contact a physician prior to administering any diarrheal medications as they may be problematic.**

#### **How is STEC infection diagnosed?**

STEC infection can only be diagnosed by a special stool culture. Public health authorities have advised doctors and laboratories to consider performing a special stool culture test for E. coli 0157:H7 particularly in people with bloody diarrhea.

#### **How soon after exposure do symptoms appear?**

The time between ingesting the STEC bacteria and feeling sick is called the “incubation period.” The incubation period is usually 3-4 days after the exposure, but may be as short as 1 day or as long as 10 days. The symptoms often begin slowly with mild belly pain or non-bloody diarrhea that worsens over several days. HUS, if it occurs, develops an average 7 days after the first symptoms, when the diarrhea is improving.

#### **How can Shiga toxin-producing E. coli (STEC) infection be prevented?**

- **WASH YOUR HANDS** thoroughly after using the bathroom or changing diapers and before preparing or eating food.
- **WASH YOUR HANDS** after contact with animals or their environments (at farms, petting zoos, fairs, parks, even your own backyard)
- **COOK meats thoroughly.** Ground beef and meat that has been needle-tenderized should be cooked to a temperature of at least 160°F/70°C. It’s best to use a thermometer, as color is not a very reliable indicator of “doneness.”
- **AVOID** raw milk, unpasteurized dairy products, and unpasteurized juices (like fresh apple cider).
- **AVOID** swallowing water when swimming or playing in lakes, ponds, streams, swimming pools, and backyard “kiddie” pools.
- **PREVENT** cross contamination in food preparation areas by thoroughly washing hands, counters, cutting boards, and utensils after they touch raw meat.

For more information on Shiga-toxin producing E.coli please contact Jefferson County Public Health Environmental Health Services Division, Consumer Protection Program at 303-271-5700.