

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 are harmless, some *E. coli* bacteria can cause serious human disease. Shiga toxin-producing *E. coli* (STEC), including *E. coli* O157:H7 and other Non-O157:H7 strains such as O111, O26 and others, can cause mild to severe diarrhea. In addition, STEC strains produce a toxin called Shiga toxin that may lead to a condition known as Hemolytic Uremic Syndrome, or HUS, which can affect the kidneys and other organs

What are the symptoms of infection with STEC?

Mild to severe diarrhea is the primary symptom of STEC; stools may be watery, frequent, and may contain blood. Stomach cramps may occur, but fever is not usually present. About eight percent of people that have an *E. coli* O157:H7 infection develop HUS, a condition in which red blood cells are destroyed and the kidneys fail. Because less is known about other strains of STEC, these may have higher or lower rates of HUS development. Children under five years of age are more likely to be diagnosed with STEC diarrhea, and are also more likely to develop HUS than other age groups. Elderly people are believed to be more susceptible to HUS as well. Other complications of STEC include thrombotic thrombocytopenic purpura (TTP), which is a decrease in the number of platelets in the blood, which can affect the body's ability to stop bleeding.

How is STEC spread?

E. coli O157:H7, and other strains of STEC, are found naturally in the intestines of ruminant animals. Direct or indirect contact with the feces of these animals can result in infection. Undercooked ground beef is an especially high-risk food item for *E. coli* O157:H7; hamburgers and other ground beef-containing foods should always be thoroughly cooked. Infection may also result from 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 person or animal. Person-to-person transmission can occur if infected persons do not wash their hands after using the toilet or after changing diapers.

Fruits and vegetables, including juice, can also become contaminated with STEC bacteria during growing and post-harvest processing; however, cooking will destroy STEC bacteria. All raw fruits and vegetables, and unpasteurized juices, should be considered potentially contaminated with bacteria. Sprouts, such as alfalfa sprouts and bean sprouts, may contain bacteria inside them which cannot be removed by washing. For this reason, it is advisable that children, the elderly, and those with weakened immune systems (such as those receiving cancer treatment, taking immunosuppressive drugs or infected with HIV) only eat cooked sprouts.

How soon after infection do symptoms occur?

Ingesting STEC bacteria can result in symptoms within two and ten days. Usually symptoms occur within three to four 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 their diarrhea has ceased for at least 24 hours. Persons working in food services, in a child care centers, or in direct patient care must not work while they have diarrhea. Children should not attend a day care center with diarrhea. Those in food service, child care 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?

Most persons recover without antibiotics or other specific treatment in 5-10 days. There is no evidence that antibiotics improve the course of disease, and it is thought that treatment with some antibiotics may increase kidney complications such as HUS. Antidiarrheal agents should also be avoided. Individuals who experience symptoms of illness similar to STEC should contact their health care provider.

What can be done to prevent an STEC infection?

Actions to prevent STEC fall into three categories: hygiene, food preparation and other high-risk settings:

Hygiene:

1. Always wash your hands with soap and water after changing diapers or using the toilet and before preparing or eating food.
2. Do not prepare food for other people while you are ill with diarrhea.
3. Always wash hands carefully before, and after, preparing any raw meat to prevent cross-contamination. Wash produce before preparing.
4. Make sure that children wash their hands carefully, especially after using the bathroom or petting livestock.

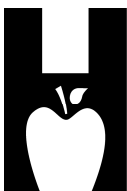
Food Preparation and Recommendations:

1. Don't eat raw, or undercooked ground meats. Cook hamburger until it is well done and there is no pink inside. Use a meat thermometer to insure an internal temperature of 68° C (155° F) for at least 15 to 16 seconds.
2. Do not drink unpasteurized milk or juices, such as unpasteurized apple cider.
3. Always refrigerate meat and meat products. NEVER leave meats at room temperature. Place meats in a plastic bag or container so they don't drip on other foods, especially ready-to-eat foods such as fruit or vegetables.
4. Rinse raw fruits and vegetables in cool tap water immediately before eating. Do not use soap or detergents. Scrub firm produce, such as melons and cucumbers, with a clean produce brush.
5. Clean cutting boards and utensils used to prepare raw meat with soap and warm water after each use to prevent cross-contamination.
6. Children, the elderly, and those with weakened immune systems (those with HIV infection, those receiving cancer treatment, or taking immunosuppressive drugs) should avoid eating raw sprouts.

Precautions for other settings associated with STEC:

1. People who work with livestock, especially cattle, should practice good personal hygiene and hand washing after handling these animals. Shoes and clothing soiled with animal manure should not be worn in the house.
2. Avoid swimming in farm ponds or lakes where animal waste could be draining into the swimming area.

OSDH 10/09



Acute Disease Service
Oklahoma State
Department of Health

For further information call or visit us on the World Wide Web
Acute Disease Service
Oklahoma State Department of Health
Phone (405) 271-4060
<http://ads.health.ok.gov>