

E. coli

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What is *E. coli*?

E. coli (short for *Escherichia coli*) are bacteria that normally live in the intestines of humans and animals. Although most strains are harmless, several are known to produce toxins that can cause diarrhea. These toxin producing strains are called Shiga toxin-producing *E. coli* (STEC). One example from this group is a strain known as O157:H7 which can cause severe diarrhea and kidney damage.

Who gets toxin-producing *E. coli* (STEC) infection?

Anyone of any age can become infected with STEC but the very young and the elderly are more likely to develop serious complications.

How is it spread?

STEC can be acquired by eating contaminated food. The bacteria live in the intestines of some healthy cattle and contamination of the meat may occur in the slaughtering process. Deer meat (venison) may also be infected with the organism. Eating meat that is rare or inadequately cooked is the most common way of getting the infection. Fresh vegetables, unpasteurized fruit juices and raw milk have also caused outbreaks. With careless food handling any food product eaten raw can be contaminated by raw meat juices. Person-to-person transmission, especially in child care settings, can occur if infected people do not wash their hands after using the toilet or diapering children. Drinking contaminated water and swimming in contaminated shallow lakes may also cause infection. Exposures have also occurred from farm animals, particularly calves and cows, and deer jerky which is uncooked dried meat.

What are the symptoms?

Some infected people 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. Symptoms generally appear three to four days after exposure, but can take as long as nine days to appear. Persons experiencing these symptoms should contact their physician.

How is STEC infection diagnosed?

Infection with STEC can only be diagnosed by special testing that is not performed in all laboratories. Public health authorities advise doctors and laboratories to consider performing these tests for STEC, particularly in people with bloody or severe diarrhea. Laboratory tests can identify the toxin produced by *E. coli*, and a culture to grow the organism should also be done.

What is the treatment?

Symptoms generally go away without antibiotics or other specific treatment in five to ten days. Studies suggest antibiotics can be harmful in the treatment of *E. coli* O157:H7 infection. It is recommended that antibiotics and diarrhea medicines not be given.

What serious complications can result from *E. coli* O157:H7 infection?

In some people, particularly children under five years of age, the infection can cause a complication called hemolytic uremic syndrome (HUS). This is a serious disease in which red blood cells are destroyed and the kidneys fail. 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.

What can I do to prevent infection?

Do not eat undercooked hamburger or other ground beef products. Cook ground beef to 160 degrees F. Venison should be cooked to 165 degrees F. Make sure cooked ground beef is brown throughout (not pink) and the juices run clear. Drink only pasteurized milk, milk products and fruit juices. Carefully wash all produce, kitchen utensils and countertops. Wash hands carefully with soap after using the toilet, changing a child's diaper, or touching farm animals to reduce the risk of spreading disease. Wash hands with hot, soapy water, rubbing hands together for 20 seconds. Persons ill with diarrhea or children in diapers should not swim in pools or lakes.

Outbreaks

The largest Washington State *E. coli* O157:H7 outbreak was in 1993, when 477 people were infected from contaminated, undercooked hamburger. In 1994, 11 people were infected from contaminated ground beef and also in 1994, 15 people were infected from contaminated salami. Additional outbreaks have occurred in the United States from non-beef sources including lettuce and salad bars where foods were contaminated by improperly cleaned utensils, working surfaces and infected food handlers. In addition, outbreaks have occurred in people who have consumed garden vegetables fertilized with animal manure, unpasteurized apple cider, and home made venison jerky. Recently there have been cases due to contaminated swimming water and petting farms.

Cases

Most STEC infections are single cases and not associated with outbreaks. The numbers of reported cases in Washington peaked in 1993 at 741 due to a large outbreak. Annually there are 150-300 cases in Washington.

How can I get more information?

Contact the Food Safety Program at (360) 236-3385 or 1-888-586-9427, or Communicable Disease Epidemiology at (206) 418-5500 or toll-free 877-539-4344.

Documents posted in .pdf version on the Department of Health Web site will be made available in an alternative format on request to users who are unable to download or view .pdf files on the Web. To request an alternative format, contact: Webmaster@doh.wa.gov .