

E. coli Infection

What is *E. coli*?

Escherichia coli (or simply *E. coli*) is one of the many groups of bacteria that live in the intestines of healthy humans and most warm-blooded animals. *E. coli* bacteria help maintain the balance of normal intestinal flora (bacteria) against harmful bacteria and synthesize or produce some vitamins.

However, there are hundreds of types or strains of *E. coli* bacteria. Different strains of *E. coli* have different distinguishing characteristics.

A particular strain of *E. coli* known as *E. coli* O157:H7 and also known as enterohemorrhagic *E. coli* causes severe intestinal infection in humans. It is the most common strain to cause illness in people. It can be differentiated from other *E. coli* by the production of a potent toxin that damages the lining of the intestinal wall, causing bloody diarrhea.

How is the *E. coli* infection spread?

In 1982, *E. coli* O157:H7 was initially identified as the cause of bloody diarrhea from eating undercooked meat that was contaminated with the bacteria. Since that time, outbreaks of *E. coli* have been associated with other types of foods such as spinach, lettuce, sprouts, unpasteurized milk, apple juice, apple cider, etc., and well water or surface water areas frequently visited by animals. Outbreaks have also been traced to animals at petting zoos and day care centers.

E. coli O157:7 is found in the intestines of healthy cattle, goats, deer, and sheep. According to the Centers for Disease Control and Prevention – USA (CDC), the transmission of these bacteria to humans may occur in the following manner:

Meat, such as beef from cows, may become contaminated when organisms are accidentally mixed in with beef, especially when it is ground. Meat contaminated with *E. coli* does not smell and looks normal. It is important to thoroughly cook beef.

Infection may occur after swimming in or drinking water that has been contaminated with *E. coli*.

Person-to-person contact in families and in child care and other institutional care centers

are also places where the transmission of the bacteria can occur.

However, the CDC also indicates the way *E. coli* is transmitted may change over time.

What are the symptoms of an *E. coli* infection?

An *E. coli* infection can make a person very ill. Symptoms usually begin two to five days after ingesting contaminated foods or liquids, and may last for eight days. The following are some of the most common symptoms associated with *E. coli*. However, each person may experience symptoms differently and may include:

- Abdominal cramps
- Severe bloody diarrhea
- Non-bloody diarrhea
- Little to no fever
- Fatigue
- Nausea
- Hemolytic uremic syndrome (HUS), a serious complication that can lead to kidney failure and death

Symptoms may range from none to HUS. In HUS, an individual's red blood cells (oxygen-carrying cells in the bloodstream) are destroyed and the kidneys stop working. Approximately 8 percent of infections can result in this syndrome. Children and the elderly may be more prone to develop this complication, which may be life-threatening.

How is *E. coli* diagnosed?

E. coli can be confirmed with a special stool culture. Stool samples are tested to compare with the source or contaminated food that has caused an outbreak. The CDC calls this "DNA fingerprinting" of *E. coli*.

Treatment for an *E. coli* infection

Antibiotics are not used with this type of infection, and taking them may increase the risk of HUS. In addition, antidiarrheal medications, such as loperamide (Imodium), are not used. Recovery for most people with this illness usually occurs within five to 10 days.

If a person develops HUS, hospitalization in an intensive care unit may be required. Treatment may include blood transfusions and kidney dialysis. According to the CDC, three to five

E. coli Infection

percent of persons who develop HUS may die from this complication.

How can an *E. coli* infection be prevented?

General recommendations for prevention of the infection include:

- Cook all ground meat thoroughly. Make sure that the cooked meat is gray or brown throughout (not pink), any juices run clear, and the inside is hot.
- Use a digital instant-read meat thermometer to make sure the temperature of the meat has reached a minimum of 160 degrees F.
- If you are served an undercooked meat in a restaurant, send it back.
- Wash all vegetables and fruits with water, especially if you do not plan to cook them.
- Consume only pasteurized milk and milk products. Avoid raw milk.
- Consume only pasteurized juices.
- Keep raw meat separate from ready-to-eat foods.
- Make sure that infected persons, especially children, wash their hands carefully and frequently with soap to reduce the risk of spreading the infection.
- Drink municipal water that has been treated with adequate levels of chlorine, or other effective disinfectants.
- Avoid swallowing lake or pool water while swimming.
- Wash hands thoroughly after using the toilet.
- Wash hands thoroughly after handling animals, animal bedding, or any material contaminated with animal feces.
- People with diarrhea should not:
 - Swim in public pools or lakes
 - Bathe with others
 - Prepare food for others