

# E.coli 0157:H7 and Foodborne Illness

## What is E.coli 0157:H7?

*E.coli* 0157:H7 is a particular strain of *Escherichia coli* bacteria. *E.coli* 0157:H7 is different from other *E.coli* because it produces potent toxins and can cause foodborne or person-to-person transmitted disease.

## How serious is the illness?

The toxin produced by this organism causes severe damage to the intestinal lining. Severe abdominal cramps and watery, and possibly bloody, diarrhea occur. Nausea and vomiting, with or without a low-grade fever, may occur as the colon wall is inflamed where the bacteria attach.

Hemorrhagic colitis is usually self-limiting in healthy adults. Recovery occurs within four to ten days. Children, elderly adults, or immunocompromised individuals are more susceptible and the hemorrhagic colitis can be very severe requiring hospitalization in up to 50 percent of patients.

In 2 to 15 percent of the confirmed cases in children, the infection may develop into hemolytic uremic syndrome (HUS). This syndrome begins three to four days after the contaminated food is consumed and lasts eight to ten days.

HUS symptoms are acute abdominal cramps; bloody diarrhea; hemolytic anemia, a low-grade fever; and urinary tract infection. This can ultimately lead to kidney failure with the possible permanent loss of kidney function.

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Dialysis may be needed for recovery. HUS is a leading cause of acute kidney failure in children and the elderly.

Extreme cases of HUS may progress to thrombotic thrombocytopenic purpura (TTP) in adults, especially the elderly. TTP is a central nervous system disease that causes seizures, coma, and blood clots in the brain. The death rate from *E.coli* 0157:H7 is three to five percent. The incidence of death in the elderly from TTP is as high as 50 percent of confirmed cases.

## How long has *E.coli* 0157:H7 been a problem?

This particular *E.coli* strain was first identified with foodborne illness in 1982. Three outbreaks—with hemorrhagic colitis as a common symptom—were linked to the organism.

From 1982 to 1992, sixteen deaths in the United States were associated with *E.coli* 0157:H7. In 1993, *E.coli* 0157:H7 caused a major outbreak of illness in consumers who ate hamburgers at fast-food restaurants in four western states. Over 500

individuals became ill including 123 suffering from serious hemorrhagic colitis, at least thirty-five cases of hemolytic uremic syndrome (HUS), and five deaths.

Eighty-eight percent of the cases were linked to undercooked hamburgers from multiple outlets of a single fast-food chain. Nearly 12 percent resulted from secondary person-to-person contamination. The bacteria were transmitted from

infected individuals to healthy people through poor hygienic practices. Once infected, individuals shed the bacteria in their feces for two or more weeks.

Many other outbreaks of foodborne illness from *E.coli* 0157:H7 have occurred with other deaths as a result. None of the outbreaks have been as large or caused as much publicity as the outbreak described above.

## What foods are most likely to be contaminated?

Most of the confirmed *E.coli* 0157:H7 cases have been linked to undercooked ground beef. Other sources of the bacteria have included raw milk, mayonnaise which had been contaminated with meat drippings, unpasteurized apple cider, and most recently, salami.

## What can you do to protect yourself and your family?

■ *Avoid eating or serving undercooked ground meat.* Whether you are cooking hamburgers yourself at home or eating them out, check them with a fork to make sure they are done all the way through and that the juices are clear. Send back any



undercooked hamburger or other foods made from ground meat.

At home, cook all dishes made with ground meat until brown or gray inside or to an internal temperature of 160 degrees F. The 1993 Food Code for food-service operations specifies a minimum of 155 degrees F.

■ *Quickly freeze or refrigerate all ground meat and other perishable foods after shopping for food.* Never thaw food on the counter.

■ *Wash your hands, utensils, and work areas with hot soapy water to keep the bacteria from spreading after you have contact with raw meat.* Also, wash your hands after using the bathroom or diapering a child. Wash your hands with soap and water as hot as your hands can tolerate. Scrub for twenty seconds, paying particular attention to your nails, the areas around rings, and between your fingers.

### **What are the government and the food industry doing to deal with *E.coli*?**

The USDA has initiated programs to eliminate or reduce bacterial contamination throughout part of the food system it regulates, from production to consumption.

On-farm production, slaughter operations, processing plants, food services, retail outlets, and consumers are focal points. Research, regulatory changes, methods for detecting organisms, Hazard Analysis Critical Control Point Programs (HACCP), and education are components.

The U.S. Food and Drug Administration (FDA), through the 1993 Food Code, and, at the state level, health departments are promoting HACCP in food-service and processing plants, with increased attention to hygiene and the use of proper storage, cooking, and holding temperatures.

Food manufacturers and processors, food-service and retail food operations, and others also are working to improve food safety and sanitation and to control harmful organisms that might contaminate food at various points along the path food takes from the farm to the table.



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