

# The Most Common Harmful Foodborne Bacteria

Some of the most common harmful foodborne bacteria are:

## **Escheria coli O157:H7 (E. coli O157:H7)**

A bacterium that can produce a deadly toxin. Infections from *E. coli* O157:H7 are estimated at 73,000 cases per year.

While most *E. coli* are normal residents of our small intestine and aid in digestion and enable our bodies to create vitamin K, some strains, such as *E. coli* O157:H7, can cause severe illness in people and animals.

*Sources:* Meat, especially undercooked or raw hamburger, uncooked produce, raw milk, unpasteurized juice and contaminated water

*Incubation:* Usually 3 to 4 days after ingestion, but may occur 1 to 10 days after ingestion

*Symptoms:* Often severe abdominal cramps, bloody diarrhea and nausea. *E. coli* O157:H7 can also manifest as non-bloody diarrhea or be symptomless. In young children, the elderly and people with weakened immune systems, this pathogen can cause kidney damage that can lead to death.

*Duration:* 5 to 8 days

## **Campylobacter jejuni**

This is the most common bacterial cause of diarrhea in the U.S., resulting in 1 to 6 million illnesses each year. Children under age 1 have the highest rate of *Campylobacter* species infections.

*Sources:* Raw milk, untreated water and raw and undercooked meat, poultry or shellfish

*Incubation:* Generally 2 to 5 days after ingestion

*Symptoms:* Diarrhea (sometimes bloody), abdominal cramps, fever, muscle pain, headache and nausea

*Duration:* 7 to 10 days

## **Salmonella Enteritidis and Salmonella Enteritidis (2 strains)**

A group of bacteria that can cause diarrheal illness in people.

*Sources:* Raw and undercooked eggs, raw meat, poultry, seafood, raw milk, dairy products and produce

*Incubation:* 12 to 72 hours after eating contaminated food

*Symptoms:* Diarrhea, fever, and abdominal cramps; symptoms can be more severe and cause death among people in the at-risk groups

*Duration:* 4 to 7 days

More on *Salmonella* Enteritidis and *Salmonella* Enteritidis:

- Approximately 2,000 different serotypes of *Salmonella* bacteria exist. *Salmonella* serotype Typhimurium and *Salmonella* serotype Enteritidis are the most common in the U.S.
- Most types of *Salmonella* live in the intestinal tracts of animals and birds and are transmitted to humans by contaminated foods of animal origin. *Salmonella* Enteritidis can silently infect the ovaries of healthy-appearing hens and contaminate eggs before the shells are formed.
- *Salmonella* Typhimurium DT104 is an emerging pathogen and a highly virulent strain of *Salmonella* that is resistant to several antibiotics. This organism is now the second most prevalent strain of *Salmonella* after *Salmonella* serotype Enteritidis.

## **Vibrio cholerae**

This bacterium occurs naturally in the aquatic and marine environment. It causes cholera, a severe disease that, if untreated, could cause death.

*Sources:* Raw and undercooked seafood or other contaminated food and water. The contamination is the result of the food or drinking water mixing with water from sources that receive the untreated feces of cholera victims.

*Incubation:* 6 hours to 5 days after eating contaminated food

*Symptoms:* Often absent or mild. Some people develop a severe illness with profuse diarrhea, vomiting and leg cramps. Loss of body fluids can lead to dehydration and shock. Without treatment, death can occur within hours.

*Duration:* 7 days

## **Vibrio vulnificus**

In the same family as bacteria that cause cholera. Usually lives in warm seawater and is part of a group of vibrios that are called “halophilic” because they require salt.

*Sources:* raw, contaminated seafood

*Symptoms:* Diarrhea, abdominal pain, nausea, vomiting, fever and sudden chills; sometimes sores on legs that resemble blisters

*Duration:* 2 to 3 days

## **Shigella**

Carried only by humans and causes an estimated 448,420 cases of diarrheal illnesses in the U.S. per year. Poor hygiene, especially improper hand washing, causes *Shigella* to be easily passed from person to person via food. Once in food, the bacterium multiplies rapidly at room temperature.

*Sources:* Salads, milk and dairy products, raw oysters, ground beef, poultry and unclean water

*Incubation:* 1 to 7 days after eating contaminated food

*Symptoms:* Diarrhea, fever, abdominal cramps, vomiting and bloody stools

*Duration:* 5 to 7 days

## **Yersinia enterocolitica**

This pathogen causes yersiniosis, a disease characterized by diarrhea and/or vomiting.

*Sources:* Raw meat and seafood, dairy products, produce and untreated water

*Incubation:* 1 to 2 days after eating contaminated food

*Symptoms:* Fever, diarrhea, vomiting, and abdominal pain, which may be more severe for children

*Duration:* 1 to 2 days

## **Staphylococcus aureus**

Carried on the skin and in nasal passages of humans and often found in infected cuts and burns.

Always cover these wounds with a water-proof bandage or plastic gloves to avoid contact with food.

*Staphylococcus aureus* produces a toxin that causes vomiting in as little as 30 minutes after ingestion. It also multiplies rapidly in food that is left out at room temperature.

*Sources:* Dairy products, salads, cream-filled pastries and other desserts, high-protein foods, such as cooked ham, raw meat and poultry and humans (skin, infected cuts, pimples, noses and throats).

*Incubation:* Usually rapid— within 30 minutes to 8 hours after eating

*Symptoms:* Nausea, abdominal cramps, vomiting, and diarrhea

*Duration:* 24 -48 hours

### **Listeria monocytogenes**

Unlike most bacteria, this pathogen can grow slowly at refrigerator temperatures. It can also cause serious problems in vulnerable people, especially pregnant women, newborns, people with weakened immune systems and the elderly.

*Sources:* Often found in refrigerated, ready-to-eat foods

*Incubation:* Most symptoms have been reported 48 to 72 hours after consumption of contaminated food, but can develop from 7 to 30 days after ingestion.

*Symptoms:* Fever, headache, fatigue, muscle aches, nausea, vomiting, diarrhea, meningitis (a bacterial disease in which any of the three membranes that envelop the brain and spinal cord become inflamed) and miscarriages, resulting in a 20% mortality rate in fetuses.

*Duration:* 1 to 4 days

### **Clostridium perfringens**

A foodborne pathogen that persists as heat-stable spores. If foods are only moderately cooked and allowed to remain at room temperature, the spores can germinate and produce a harmful toxin.

*Sources:* Meat and meat products

*Incubation:* Usually occurs 8 to 12 hours after eating contaminated food

*Symptoms:* Abdominal pain, diarrhea and sometimes nausea and vomiting

*Duration:* The illness is usually mild and lasts a day or less; however, symptoms can be more serious in the elderly or people with weakened immune systems.

### **Clostridium botulinum**

This bacterium lives in the soil and in the bottom of lakes, oceans, etc. It is also found in moist, low-acid food, containing less than 2% oxygen, and stored between 40° F (4° C) and 120° F (49° C). This bacterium produces a toxin that causes botulism, a disease characterized by muscle paralysis.

Proper heat processing destroys *Clostridium botulinum* in canned food. Freezer temperatures inhibit its growth in frozen food. Low moisture controls its growth in dried food. High oxygen controls its growth in fresh foods.

*Sources:* Home-canned and prepared foods, vacuum-packed and tightly-wrapped food, meat products, seafood and herbal cooking oils

*Incubation:* 4 to 36 hours after ingesting

*Symptoms:* Dry mouth, double vision followed by nausea, vomiting and diarrhea. Later, constipation, weakness, muscle paralysis, and breathing problems may develop. It's important to get immediate medical help because botulism can be fatal. With proper treatment, most victims survive.

*Duration:* It can take from 1 week to a full year to recover

*Source:* Comprehensive List of Terms, Food Safety A to Z Reference Guide, U.S. Food and Drug Administration (FDA), <http://www.fda.gov/Food/ResourcesForYou/StudentsTeachers/ScienceandTheFoodSupply/ucm216150.htm>