



***Salmonella* Questions and Answers**

**Related to the Outbreak of *Salmonella* Saintpaul infections associated with tomatoes
Information updated June 18, 2008**

General Information

What is salmonellosis? What are the symptoms?

Salmonellosis is an infection caused by bacteria called *Salmonella*. Most people infected with *Salmonella* develop fever, diarrhea, and abdominal cramps 12 - 72 hours after exposure. Although illness usually lasts 4 - 7 days and most people recover without treatment, severe illness may occur that requires medical attention and hospitalization. In these patients, the *Salmonella* infection can spread from the intestines to the bloodstream and then to other body sites. In this situation, the infection can cause death unless the patient is treated promptly with antibiotics. Infants, elderly people, and people with impaired immune systems are more likely than other people to become severely ill.

How do people get infected with *Salmonella*?

Salmonella bacteria live in the intestinal tracts of many animals, including food animals such as cattle and poultry, wild animals, and pets. *Salmonella* usually are transmitted to humans by eating food contaminated with animal feces. Contaminated foods usually look and smell normal. Contaminated foods are often of animal origin, such as poultry, eggs, pork, and raw milk. However, contaminated fruits and vegetables also cause many illnesses. Thorough cooking kills *Salmonella*. More information about cooking temperatures and food safety may be found at http://www.fightbac.org/content/view/172/2/*.

The feces of some pets, especially reptiles, can contain *Salmonella* without causing illness in the animal. Birds commonly carry *Salmonella*, and outbreaks of illness among young children given baby chicks at Easter have prompted health authorities to advise against this practice. People should always wash hands after being in contact with any animal or its environment. Adults should assure that children practice proper handwashing techniques. More information on proper handwashing may be found at <http://www.cdc.gov/cleanhands/>.

Food handlers and others can contaminate food by not washing hands with soap after handling raw poultry, eggs, or meat, or after using the bathroom.

Does *Salmonella* make foods taste or look different?

Most products contaminated with *Salmonella* do not taste or look any different than usual.

How is *Salmonella* infection diagnosed?

Salmonella infection is usually diagnosed by culture of a stool sample. In severe illness, it can sometimes be detected in other parts of the body such as blood.

How can *Salmonella* infections be treated?

Salmonella infections usually resolve in 4 - 7 days and usually do not require treatment other than oral fluids. Persons with severe diarrhea may require rehydration with intravenous fluids. Antibiotics, such as ampicillin, trimethoprim-sulfamethoxazole, or ciprofloxacin, are not usually necessary unless the infection spreads from the intestines.

Are there long term consequences to a *Salmonella* infection?

Persons with diarrhea usually recover completely, although it may be several months before their bowel habits are entirely normal. A small number of persons with *Salmonella* develop pain in their joints, irritation of the eyes, and painful urination. This is called Reiter's syndrome. It can last for months or years, and can lead to chronic arthritis which is difficult to treat. Antibiotic treatment does not make a difference in whether or not the person develops arthritis.

How common is salmonellosis?

In 2004, CDC estimated that there are about 1.4 million illnesses, 15,000 hospitalizations, and 400 deaths from *Salmonella* infection in the United States every year. Approximately 40,000 of those infections are confirmed each year by isolation of the *Salmonella* strain. Salmonellosis is more common in summer than in winter.

Children are the more likely than adults to get salmonellosis. The rate of diagnosed infections in children less than five years old is about five times higher than the rate in all other persons. Young children, the elderly, and the immunocompromised are the most likely to have severe infections.

How can tomatoes become contaminated with *Salmonella*?

Salmonella in the environment can contaminate tomatoes. *Salmonella* can be found in the feces of many animals (e.g., food animals, reptiles, amphibians, birds) and in some habitats, such as ponds and drainage ditches. Although the exact mechanism by which tomatoes become contaminated is not known, experimental evidence suggests certain possibilities. In experimental studies, the insides of whole tomatoes can be contaminated in at least two ways: (1) if tomatoes are immersed in water that is colder than the tomato, water can enter through the stem scar; if the water is contaminated, *Salmonella* can be carried in; (2) if contaminated water touches the stem or flower of a tomato plant, the growing tomato can be contaminated. Contamination on the tomato surface also can be transferred to the inside when it is cut. Food handlers infected with *Salmonella* who have not washed their hands may also contaminate tomatoes during preparation. If a cut tomato that is contaminated with *Salmonella* is kept out of the refrigerator, the bacteria can multiply to much higher numbers.

Consumer Advice

What is the CDC's current advice about eating tomatoes?

At this time, consumers should avoid eating or handling raw red plum, red Roma, and round red tomatoes **unless** they are from the sources listed at:

<http://www.fda.gov/oc/opacom/hottopics/tomatoes.html>*. If consumers have tomatoes in their homes and are unsure of where they were grown or harvested, they are encouraged to contact the store where they bought the tomatoes. Consumers may continue to buy cherry tomatoes, grape tomatoes, tomatoes with the vine still attached, and tomatoes grown at home — all of which do not appear to be involved in the outbreak.

Consumers everywhere are advised to:

- Refrigerate within 2 hours or discard cut, peeled, or cooked tomatoes, or products made from tomatoes, such as salsa.
- Avoid purchasing bruised or damaged tomatoes and discard any that appear spoiled.
- Thoroughly wash all tomatoes under running water. Do not wash tomatoes in a tub or sink filled with water.
- Keep tomatoes that will be consumed raw separate from raw meats, raw seafood, and raw produce items.
- Wash cutting boards, dishes, utensils, and counter tops with hot water and soap when switching between types of food products.

Is it OK for consumers to eat tomatoes that might be associated with this outbreak if they cook them?

FDA is recommending that consumers not eat any tomatoes that could be associated with this outbreak, either raw or cooked.

Salmonella is easily killed by high temperatures. However, when a food is contaminated with *Salmonella*, people often do not cook it to a high enough temperature or long enough to kill the bacteria. (For example, raw chicken is commonly contaminated with *Salmonella*. We advise people to use a cooking thermometer to assure that they cook chicken well enough to kill the *Salmonella* bacteria.)

Are tomatoes from farmers' markets included in this outbreak?

Some farmers' markets get their tomatoes from sources other than local farms. These other sources may include the same ones that provided the tomatoes implicated in the *Salmonella* outbreak. Consumers should ask retailers at farmers' markets about the sources of their tomatoes.

During this outbreak, is it safer to eat locally grown tomatoes?

Consumers should confirm with their retailers that the source of "locally grown" tomatoes is one of the sources listed on the FDA list located at

<http://www.fda.gov/oc/opacom/hottopics/tomatoes.html>*.

Where can consumers find out more about how to reduce their risk of becoming sick from eating or handling tomatoes?

More information about safe handling of fresh produce is available on the FDA website.

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Page Located on the Web at <http://www.cdc.gov/salmonella/saintpaul/faq.html>

