

## Big Six Pathogens

According to the Food and Drug Administration (FDA), there are over 40 kinds of bacteria, viruses, parasites, and molds that can occur in food and cause a foodborne illness. Of these, six have been singled out by the FDA. These have been dubbed the Big Six because they are highly contagious and can cause severe illness. These bacteria and viruses are described below.

### Major Bacteria that Cause Foodborne Illness

#### *Salmonella Typhi* (SAL-me-NEL-uh TI-fee)

Source	Food Linked with the Bacteria	Prevention Measures
<p><i>Salmonella Typhi</i> lives only in humans. People with typhoid fever carry the bacteria in their bloodstream and intestinal tract.</p> <p>Eating only a small amount of these bacteria can make a person sick. The severity of symptoms depends on the health of the person and the amount of bacteria eaten. The bacteria are often in a person's feces for weeks after symptoms have ended.</p>	<ul style="list-style-type: none"> <li>• Ready-to-eat food</li> <li>• Beverages</li> </ul>	<ul style="list-style-type: none"> <li>• Exclude food handlers who have been diagnosed with an illness caused by <i>Salmonella Typhi</i>.</li> <li>• Wash hands.</li> <li>• Cook food to minimum internal temperatures.</li> </ul>

#### *Nontyphoidal Salmonella* (NON-ti-FOY-dal SAL-me-NEL-uh)

Source	Food Linked with the Bacteria	Prevention Measures
<p>Many farm animals carry nontyphoidal <i>Salmonella</i> naturally.</p> <p>Eating only a small amount of these bacteria can make a person sick. How severe symptoms are depends on the health of the person and the amount of bacteria eaten. The bacteria are often in a person's feces for weeks after symptoms have ended.</p>	<ul style="list-style-type: none"> <li>• Poultry and eggs</li> <li>• Meat</li> <li>• Milk and dairy products</li> <li>• Produce, such as tomatoes, peppers, and cantaloupes</li> </ul>	<ul style="list-style-type: none"> <li>• Cook poultry and eggs to minimum internal temperatures.</li> <li>• Prevent cross-contamination between poultry and ready-to-eat food.</li> <li>• Exclude from the operation food handlers who are vomiting or have diarrhea and have been diagnosed with an illness from nontyphoidal <i>Salmonella</i>.</li> </ul>

## Major Bacteria that Cause Foodborne Illness

### *Shigella* spp. (shi-GEL-uh)

Source	Food Linked with the Bacteria	Prevention Measures
<p><i>Shigella</i> spp. is found in the feces of humans with the illness. Most illnesses occur when people eat or drink contaminated food or water.</p> <p>Flies can also transfer the bacteria from feces to food.</p> <p>Eating only a small amount of these bacteria can make a person sick. High levels of the bacteria are often in a person's feces for weeks after symptoms have ended.</p>	<ul style="list-style-type: none"> <li>• Food that is easily contaminated by hands, such as salads containing TCS food (potato, tuna, shrimp, macaroni, and chicken)</li> <li>• Food that has made contact with contaminated water, such as produce</li> </ul>	<ul style="list-style-type: none"> <li>• Exclude from the operation food handlers who have diarrhea and have been diagnosed with an illness caused by <i>Shigella</i> spp.</li> <li>• Wash hands.</li> <li>• Control flies inside and outside the operation.</li> </ul>

### Shiga toxin-producing *Escherichia coli* (ess-chur-EE-kee-UH-KO-LI) (STEC), also known as *E. coli*

Source	Food Linked with the Bacteria	Prevention Measures
<p>Shiga toxin-producing <i>E. coli</i> can be found in the intestines of cattle. The bacteria can contaminate meat during slaughtering.</p> <p>The bacteria is also found in infected people.</p> <p>Eating only a small amount of the bacteria can make a person sick. Once eaten, it produces toxins in the intestines, which causes the illness. The bacteria are often in a person's feces for weeks after symptoms have ended.</p>	<ul style="list-style-type: none"> <li>• Ground beef (raw and undercooked)</li> <li>• Contaminated produce</li> </ul>	<ul style="list-style-type: none"> <li>• Exclude from the operation food handlers who have diarrhea and have been diagnosed with a disease from the bacteria.</li> <li>• Cook food, especially ground beef, to minimum internal temperatures.</li> <li>• Purchase produce from approved, reputable suppliers.</li> <li>• Prevent cross-contamination between raw meat and ready-to-eat food.</li> </ul>

## Major Viruses that Cause Foodborne Illness

### Hepatitis A (*HEP-a-TI-tiss*)

Source	Food Linked with the Virus	Prevention Measures
<p>Hepatitis A is mainly found in the feces of people infected with it. The virus can contaminate water and many types of food. It is commonly linked with ready-to-eat food. However, it has also been linked with shellfish from contaminated water.</p> <p>The virus is often transferred to food when infected food handlers touch food or equipment with fingers that have feces on them. Eating only a small amount of the virus can make a person sick. An infected person may not show symptoms for weeks but can be very infectious. Cooking does not destroy Hepatitis A.</p>	<ul style="list-style-type: none"> <li>• Ready-to-eat food</li> <li>• Shellfish from contaminated water</li> </ul>	<ul style="list-style-type: none"> <li>• Exclude from the operation food handlers who have been diagnosed with Hepatitis A.</li> <li>• Exclude from the operation food handlers who have had jaundice for seven days or less.</li> <li>• Wash hands.</li> <li>• Avoid bare-hand contact with ready-to-eat food.</li> <li>• Purchase shellfish from approved, reputable suppliers.</li> </ul>

### Norovirus (*Nor-o-VI-rus*)

Source	Food Linked with the Virus	Prevention Measures
<p>Like Hepatitis A, Norovirus is commonly linked with ready-to-eat food. It has also been linked with contaminated water. Norovirus is often transferred to food when infected food handlers touch food or equipment with fingers that are contaminated by feces.</p> <p>Eating only a small amount of Norovirus can make a person sick. It is also very contagious. People become contagious within a few hours after eating it. The virus is often in a person's feces for days after symptoms have ended.</p>	<ul style="list-style-type: none"> <li>• Ready-to-eat food</li> <li>• Shellfish from contaminated water</li> </ul>	<ul style="list-style-type: none"> <li>• Exclude from the operation food handlers who are vomiting or have diarrhea and have been diagnosed with Norovirus.</li> <li>• Wash hands.</li> <li>• Avoid bare-hand contact with ready-to-eat food.</li> <li>• Purchase shellfish from approved, reputable suppliers.</li> </ul>