

Foodborne Illness: Prevention Strategies

What is Foodborne Illness?

Foodborne illness often shows itself as flu-like symptoms such as nausea, vomiting, diarrhea or fever, so many people may not recognize that the illness is caused by bacteria or other pathogens on food. The onset of symptoms may not occur for two or more days after the contaminated food was eaten. Thousands of types of bacteria are naturally present in our environment, but not all bacteria cause disease in humans. For example, some bacteria are used beneficially in making cheese and yogurt.

Bacteria that cause disease are called "pathogens." When certain pathogens enter the food supply, they can cause foodborne illness. Only a few types cause millions of cases of foodborne illness each year. Most cases of foodborne illness can be prevented. Proper cooking or processing of food destroys bacteria.

Age and physical condition place some persons at higher risk than others, no matter what type of bacteria is implicated. Infants, pregnant women, the elderly and people with compromised immune systems are at greatest risk from any pathogen. Some persons may become ill after ingesting only a few harmful bacteria; others may remain symptom free after ingesting thousands. The following factors make controlling foodborne pathogens particularly challenging.

- Consumers do not always take time to wash hands and utensils or thaw meats properly.
- Emerging pathogens demand even greater food safety vigilance than what was required in previous generations.
- The food supply has become global with many different countries supplying food products to the U.S.

- More food is prepared and consumed away from home. The U.S. Department of Agriculture (USDA) estimates that consumers spend 43 cents of every food dollar eating out. Also, an increasing amount of food prepared away from the home is then taken home for consumption, thus creating new opportunities for mishandling.

Adding to the challenge, microorganisms continue to adapt and evolve, often increasing their degree of virulence. For example, in 1990, the U.S. Public Health Service identified *E.coli* O157:H7, Salmonella, *Listeria monocytogenes* and *Campylobacter jejuni* as the four most serious foodborne pathogens in the United States because of the severity and estimated number of illnesses they cause. Of these, *Campylobacter*, *Listeria* and *E.coli* O157:H7 were unrecognized as sources of foodborne disease 20 years ago.

At the same time, bacteria already recognized as sources of foodborne illness have found new modes of transmission. While many illnesses from *E.coli* O157:H7 occur from eating undercooked ground beef, these bacteria have also been traced to other foods, such as salami, raw milk, lettuce and unpasteurized apple cider. Salmonella enteritidis, which once only contaminated the outside of egg shells, is now found inside many eggs, making uncooked eggs no longer safe to eat.

***Campylobacter jejuni*:** These bacteria are the most common cause of diarrhea. Sources: raw and undercooked meat and poultry, raw milk and untreated water. Symptoms: fever, headache and muscle pain followed by diarrhea (sometimes bloody), abdominal pain and nausea that appear two to five days after eating; may last seven to 10 days.

Listeria monocytogenes: This organism causes listeriosis, a serious disease for pregnant women, newborns and adults with a weakened immune system. Sources: soil and water. It has been found in cheese; raw milk; improperly processed ice cream; raw and undercooked meat; poultry and seafood; and raw, leafy vegetables. Symptoms: fever, chills, headache, backache, sometimes abdominal pain and diarrhea that appear 12 hours to three weeks after eating contaminated food. Later more serious illness may develop in at-risk patients (meningitis or spontaneous abortion in pregnant women); sometimes just fatigue.

E.coli O157:H7: This bacterium can produce a deadly toxin. Sources: meat, especially undercooked or raw hamburger, raw milk, unpasteurized apple juice or cider, uncooked fruits and vegetables, contaminated water, or person to person contact. Symptoms: diarrhea or bloody diarrhea, abdominal cramps, nausea, and malaise; can begin two to five days after food is eaten, lasting about eight days. Some, especially the very young, have developed Hemolytic Uremic Syndrome (HUS) that causes acute kidney failure. A similar illness, thrombotic thrombocytopenic purpura (TTP), may occur in older adults.

Salmonella: This group of organisms is the second most common cause of foodborne illness. It is responsible for millions of cases of foodborne illness a year. Sources: raw and uncooked poultry and meat, raw milk and dairy products, seafood, fruits and vegetables, improper handling of food. Symptoms: stomach pain, diarrhea, nausea, chills, fever and headache usually appear eight to 72 hours after eating; may last one to two days.

How Bacteria Get in Food

Bacteria may be present on products when you purchase them, such as raw meat, poultry, seafood, eggs or produce. Foods, including safely cooked, ready-to-eat foods, can become cross-contaminated with bacteria transferred from raw products, meat juices or other contaminated products or from poor personal hygiene.

Guidelines to Follow in Case of Suspected Foodborne Illness

Preserve the Evidence: If a portion of the suspect food is available, wrap it securely, mark "Danger"

and refrigerate it. Save all the packaging materials, such as cans or cartons. Write down the food type, the date and time consumed and when the onset of symptoms occurred. Save any identical unopened products.

Seek Treatment as Necessary: If the victim is in an "at risk" group, or if symptoms persist or are severe (such as bloody diarrhea, excessive nausea and vomiting or high temperature), seek medical care immediately.

Contact Proper Authorities: Call the local health department if the suspect food was served at a large gathering, from a restaurant or other food service facility or if it is a commercial product. Call the USDA Meat and Poultry Hotline at 1-800-535-4555 if the suspect food is a USDA-inspected product and you have all the packaging.

Preventing Foodborne Illness

Clean: Wash hands and surface often. Bacteria can spread throughout the kitchen and get on to cutting boards, knives, sponges and counter tops.

- Wash hands in hot soapy water before preparing food and after using the bathroom, changing diapers and handling pets. For best results, consumers should use warm water to moisten their hands and then apply soap and rub their hands together for 20 seconds before rinsing thoroughly.
- Wash cutting boards, knives, utensils and counter tops in hot soapy water after preparing each food item and before going on to the next one.
- Use plastic or other nonporous cutting boards. Cutting boards should be run through the dishwasher — or washed often in hot soapy water — after use.
- Consider using paper towels to clean up kitchen surfaces. Or, if using cloth towels, consumers should wash them often in the hot cycle of the washing machine.

Separate: Don't cross-contaminate. Cross-contamination is how bacteria spread from one food product to another. This is especially true for raw meat, poultry and seafood. Keep these foods and their juices away from ready-to-eat foods.

- Separate raw meat, poultry and seafood from other food in the grocery cart.

- Store raw meat, poultry and seafood on the bottom shelf of the refrigerator so juices don't drip onto other foods.
- If possible, use one cutting board for raw meat products and another for salads and other foods that are ready to be eaten.
- Always wash cutting boards, knives and other utensils with hot soapy water after they come in contact with raw meat, poultry and seafood. Then sanitize with 1 teaspoon liquid chlorine bleach per quart of water.
- Never place cooked food on a plate that previously held raw meat, poultry or seafood.

Cook: Cook to proper temperatures. Foods are properly cooked when they are heated for a long enough time and at a high enough temperature to kill the harmful bacteria that causes foodborne illness.

- Use a food thermometer, which measures the internal temperature of cooked meat and poultry, to make sure that the meat is cooked all the way through.
- Cook roasts and steaks to at least 145 °F. Allow meat to rest for 4 minutes before carving or eating.
- Cook ground beef, where bacteria can spread during grinding, to at least 155 °F. Don't depend on color changes to indicate safety! Ground beef may turn brown before it has reached a temperature at which bacteria are destroyed.
- Cook poultry to at least 165 °F.
- Cook eggs until the yolk and white are firm, not runny. Don't use recipes in which eggs remain raw or only partially cooked.
- Cook fish until it is opaque and flakes easily with a fork.
- Make sure there are no cold spots in food (where bacteria can survive) when cooking in a microwave oven. Cover food, stir and rotate for even cooking.
- Bring sauces and gravy to a boil when reheating. Heat other leftovers thoroughly to 165 °F.

Chill: Refrigerate foods quickly because cold temperatures keep most harmful bacteria from growing and multiplying. Keep a thermometer in the refrigerator and freezer, and check that temperatures stay below 40 °F in the refrigerator and below 0 °F in the freezer.

- Refrigerate or freeze perishables, prepared food and leftovers within two hours.
- Never defrost (or marinate) food on the kitchen counter. Use the refrigerator, cold running water or the microwave.
- Divide large amounts of leftovers into small, shallow containers for quick cooling in the refrigerator.
- With poultry and other stuffed meats, remove the stuffing and refrigerate it in a separate container.
- Don't pack the refrigerator. Cool air must circulate to keep food safe.

Sources:

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