



SOUTH CAROLINA FAMILY AND COMMUNITY LEADERS
Affiliated with National Volunteer Outreach Network, Country Women's Council, U.S.A., Associated
Country Women of the World and in partnership with Clemson University Cooperative Extension Service
SCFCL website: <http://www.scfcl.com>

Leader Training Guide

Foodborne Illnesses

Objectives:

- Participants will be able to identify what a foodborne illness is and what the symptoms are.
- Participants will be able to list the germs and related food items that are responsible for most foodborne illnesses.
- Participants will be able to describe how to prepare food to reduce the risk of a foodborne illness.

Lesson Overview/Introduction:

Each year, 1 in 6 Americans gets sick from and 3,000 die of foodborne diseases. Reducing foodborne illness by 10% would keep 5 million Americans from getting sick each year. Preventing a single fatal case of E. coli O157 infection would save an estimated \$7 million.

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.

Lesson:

What are Foodborne Illnesses?

Foodborne illnesses often show itself as flu-like symptoms such as nausea, vomiting, diarrhea or fever. 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.

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.

What germs are responsible for most foodborne illnesses?

- *Campylobacter* (poultry, raw milk)
 - These bacteria are the most common cause of diarrhea. 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.
- *E. coli* O157 (ground beef, leafy greens, raw milk)
 - This bacterium can produce a deadly toxin. 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) or acute kidney failure. A similar illness, thrombotic thrombocytopenic purpura (TTP), may occur in older adults.
- *Listeria* (deli meats, unpasteurized soft cheeses, produce)
 - This organism causes listeriosis, a serious disease for pregnant women, newborns and adults with a weakened immune system.
 - 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.
- *Salmonella* (eggs, poultry, meat, produce)
 - 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.
 - Symptoms: stomach pain, diarrhea, nausea, chills, fever and headache usually appear 8 to 72 hours after eating; may last one to two days.
- *Vibrio vulnificus* (raw oysters)
 - Is a bacterium in the same family as those that cause cholera and *Vibrio parahaemolyticus*. It normally lives in warm seawater and is part of a group of vibrios that are called "halophilic" because they require salt.
- Norovirus in many foods (sandwiches, salads)
 - Norovirus is a very contagious virus. You can get norovirus from an infected person, contaminated food or water, or by touching contaminated surfaces. The virus causes your stomach or intestines or both to get inflamed (acute gastroenteritis).
 - Symptoms: Stomach pain, nausea, and diarrhea and acute vomiting.

How to reduce foodborne illnesses

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.

Lesson Summary:

Food not properly prepared can lead to a foodborne illness in a matter of hours. Certain age groups are more susceptible to foodborne illnesses than others.

Suggested Activities:

- Sprinkle some glow germ powder/lotion on fake demonstration food. Have the participants reenact how they would prepare the food using the clean, separate, cook, chill method. Afterwards, use a black light to see what food items have been contaminated.
- Discuss ways to prevent foodborne illness

Suggested Materials:

- Glow germ kit (available from your food safety & nutrition agent)
- Fake demonstration food (available from your food safety & nutrition agent)
- Color coded cutting boards
- Utensils for preparing the food

Lesson Prepared by: Samantha McDowell, County Extension Agent, schadwi@clemson.edu

Lesson Review by: Susan Barefoot, Ph.D., Program Team Leader, Extension Food Safety & Nutrition, sbrft@clemson.edu

Sources/References:

- <http://www.cdc.gov/foodborneburden/PDFs/CDC-and-Food-Safety.pdf>
- http://www.clemson.edu/extension/hgic/food/food_safety/illnesses/hgic3620.html
- <http://www.foodsafety.gov/poisoning/index.html>
- <http://www.cdc.gov/foodsafety/facts.html>