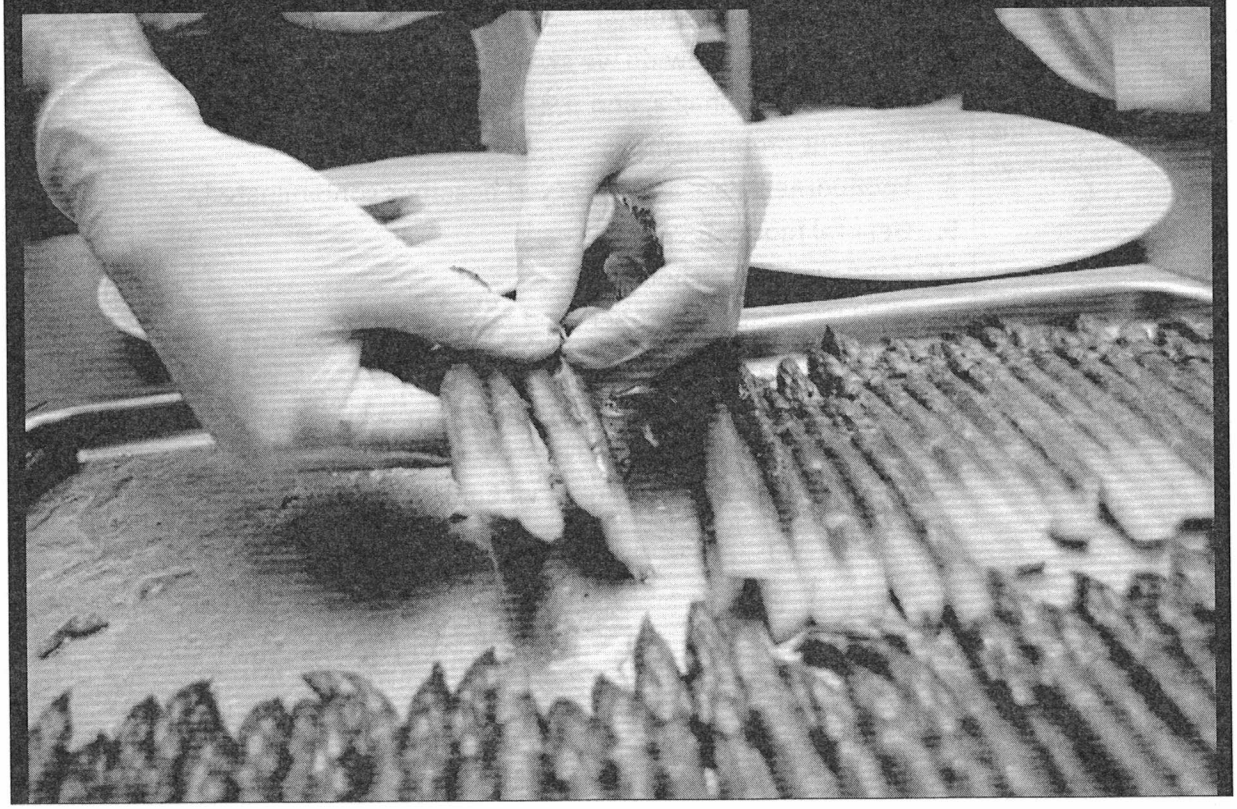
Food Safety in Residential Care

Instructor Guide



UPDATED JUNE 22, 2011

Care and Compliance Group, Inc • 800.321.1727 • www.careandcompliance.com

INSTRUCTOR GUIDE:

FOOD SAFETY IN RESIDENTIAL CARE

Overview	This module will address the care provider's responsibility to ensure food is safe, nutritious, appealing and delicious for our residents. We will discuss how foodborne illness is caused and spread as well as the proper hand washing technique and general safety practices related to food preparation.
Video(s)	"Food Safety in Residential Care" (18 minutes)
Special Supplies	None
Learning Objectives	1. Introduction to nutrition and the importance of good nutrition for residents in our communities; 2. Tips for healthy eating; 3. The importance of hydration and signs of dehydration; 4. Hydration options; 5. What are modified diets; 6. Dysphagia and how do we swallow, how it occurs, some problems caused by dysphagia, and treatment; 7. Resident preferences; 8. Foodborne illness and how food becomes contaminated; 9. General food safety practices; 10. Hand washing techniques; 11. The importance of proper food temperatures; 12. Cross-contamination; 13. How to properly clean and sanitize; 14. Chemicals in the food service area; 15. Other hazards to be aware of when dealing with food safety.

QUIZ: FOOD SAFETY IN RESIDENTIAL CARE

Name: Date:

1. Germs may be present in the food service area even if you cannot see any signs of them.

   a. True
   b. False

2. Foodborne illness is caused by germs.

   a. True
   b. False

3. Potentially hazardous foods include:

   a. Meat
   b. Fish
   c. Poultry
   d. Milk
   e. Refried beans
   f. Cooked rice
   g. Baked potatoes
   h. Cooked vegetables
   i. All of the above
   j. None of the above

4. Germs grow well on foods at warm temperatures between:

   a. 40° F and 120° F
   b. 60° F and 140° F
   c. 41° F and 140° F
   d. 40° F and 142° F

5. Parasites are worms that most often live in:

   a. Eggs and cheese
   b. Fish and meat
   c. Vegetables

6. When hand washing, lather and rub for at least:

   a. 20 seconds
   b. 30 seconds
   c. 15 seconds
   d. 10 seconds

7. Wash your hands:

   a. Before you touch anything used to prepare food
   b. Before you touch food
   c. Before you put on gloves
   d. All of the above

8. Double wash your hands:

   a. When arriving at work
   b. After using the restroom
   c. After eating
   d. After drinking from an open beverage
   e. After you blow your nose, cough, sneeze, or if you touch your mouth
   f. All of the above
   g. a, b, & e

9. Always change gloves:

   a. In between food tasks
   b. Only when you are completely finished with food preparation

10. Storing food at the right temperature and cooking food to the right temperature are vital in food safety.

    a. True
    b. False

11. Temperature between 41° F and 140° F is called:

    a. The safe zone
    b. The danger zone
    c. The safety range

12. Bacteria grows _____ in the danger zone.

    a. Slowly
    b. Quickly

13. Any food that has been in the danger zone for 4 hours should be:

    a. Discarded
    b. Refrigerated immediately
    c. Cooked immediately

14. When checking food temperature with a thermometer, insert the probe:

    a. Just under the surface of the food
    b. In the thickest part or the center of the food
    c. So that it touches bone

15. It is best to use a thermometer that will read from 32°F to 110°F to appropriately determine the safe temperature of cooking food.

    a. True
    b. False

16. Cold food should be kept at:

    a. 45° F or less
    b. 40° F or less
    c. 41° F or less

17. When cooling food, it must cool from 140° F to 70° F within ___ hours.

    a. 3
    b. 2
    c. 1

18. Typically, food may be stored safely for ____ days when the temperature remains at 40° F or below.

    a. 3
    b. 7
    c. 14

QUIZ KEY: FOOD SAFETY IN RESIDENTIAL CARE

1. Germs may be present in the food service area even if you cannot see any signs of them.

   a. **True**
   b. False

2. Foodborne illness is caused by germs.

   a. **True**
   b. False

3. Potentially hazardous foods include:

   a. Meat
   b. Fish
   c. Poultry
   d. Milk
   e. Refried beans
   f. Cooked rice
   g. Baked potatoes
   h. Cooked vegetables
   i. **All of the above**
   j. None of the above

4. Germs grow well on foods at warm temperatures between:

   a. 40° F and 120° F
   b. 60° F and 140° F
   c. **41° F and 140° F**
   d. 40° F and 142° F

5. Parasites are worms that most often live in:

   a. Eggs and cheese
   b. Fish and meat
   c. Vegetables

6. When handwashing, lather and rub for at least:

   a. 20 seconds
   b. 30 seconds
   c. 15 seconds
   d. 10 seconds

7. Wash your hands:

   a. Before you touch anything used to prepare food
   b. Before you touch food
   c. Before you put on gloves
   d. All of the above

8. Double wash your hands:

   a. When arriving at work
   b. After using the restroom
   c. After eating
   d. After drinking from an open beverage
   e. After you blow your nose, cough, sneeze, or if you touch your mouth
   f. All of the above
   g. a, b, & e

9. Always change gloves:

   a. In between food tasks
   b. Only when you are completely finished with food preparation

10. Storing food at the right temperature and cooking food to the right temperature are vital in food safety.

    a. **True**
    b. False

11. Temperature between 41° F and 140° F is called:

    a. The safe zone
    b. **The danger zone**
    c. The safety range

12. Bacteria grows _____ in the danger zone.

    a. Slowly
    b. **Quickly**

13. Any food that has been in the danger zone for 4 hours should be:

    a. **Discarded**
    b. Refrigerated immediately
    c. Cooked immediately

14. When checking food temperature with a thermometer, insert the probe:

    a. Just under the surface of the food
    b. **In the thickest part or the center of the food**
    c. So that it touches bone

15. It is best to use a thermometer that will read from 32°F to 110°F to appropriately determine the safe temperature of cooking food.

    a. True
    b. **False**

16. Cold food should be kept at:

a. 45° F or less
b. 40° F or less
c. **41° F or less**

17. When cooling food, it must cool from 140° F to 70° F within ___ hours.

a. 3
b. 2
c. 1

18. Typically, food may be stored safely for ____ days when the temperature remains at 40° F or below.

a. 3
b. 7
c. 14

Certificate of Completion

THIS IS TO RECOGNIZE

_____

FOR DEDICATION TO QUALITY RESIDENT CARE
THROUGH EDUCATION AND PROFESSIONAL DEVELOPMENT.

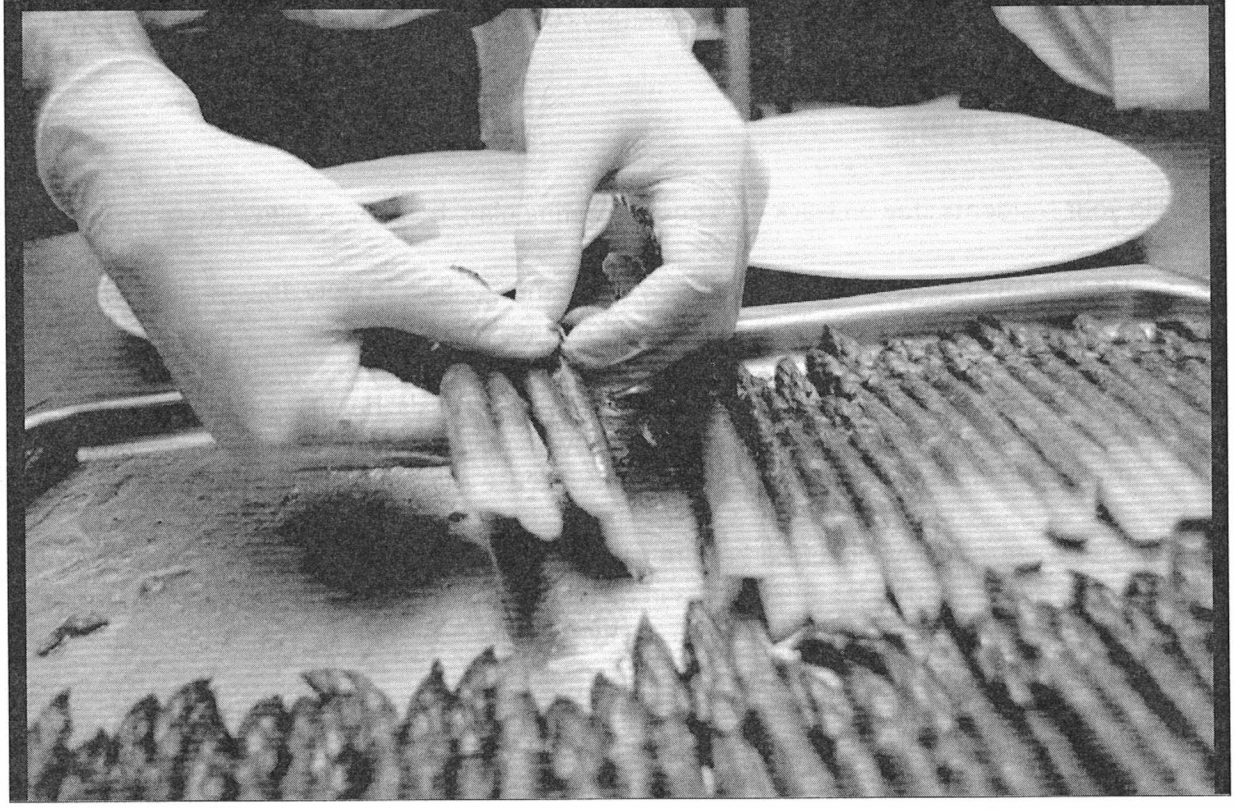
FOOD SAFETY IN RESIDENTIAL CARE

_____ _____

Instructor Signature Date

Food Safety in Residential Care

Learner Workbook



UPDATED JUNE 22, 2011

Care and Compliance Group, Inc • 800.321.1727 • www.careandcompliance.com

INTRODUCTION TO NUTRITION

Follow all physician instructions regarding dietary requirements and/or restrictions for your resident.

The following information on food and nutrition is adapted from the Department of Health and Human Services publications "Young at Heart – Healthy Eating and Physical Activity Across Your Lifespan" and "Getting Older. Living Healthier. Feeling Better."

The Importance of Good Nutrition

Healthy eating and regular physical activity are keys to good health at any age. They may lower the risk for obesity, type 2 diabetes, coronary heart disease, cancer, and other chronic diseases. They may even help ward off depression and keep the mind sharp as a person ages. Always refer to the resident's physician for specific dietary recommendations.

Tips for Healthy Eating

To help your residents stay on track with healthy eating plan, help them follow these tips:

- Do not skip meals. Skipping meals may cause metabolism to slow down or lead to eating more high-calorie, high-fat foods at the next meal or snack.

- Select high-fiber foods like whole-grain breads and cereals, beans, vegetables, and fruits. They may help keep the resident's bowel movements regular and lower the risk for chronic diseases, such as coronary heart disease and type 2 diabetes.

- Encourage/offer lean beef, turkey breast, fish, or chicken with the skin removed to lower the amount of fat and calories in meals. As a person ages, the body needs fewer calories, especially if they are not very active.

- Encourage/offer three servings of vitamin D-fortified low-fat/fat-free milk, yogurt, or cheese every day. Milk products are high in calcium and vitamin D and help keep bones strong as you age

- Encourage/offer foods fortified with vitamin B12. Many adults over the age of 50 have difficulty absorbing adequate amounts of this vitamin. Therefore, they should get this nutrient through fortified foods, such as breakfast cereals, or from a dietary supplement, if ordered by the physician.

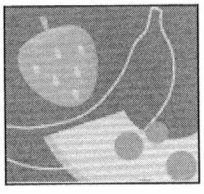
- Keep nutrient-rich snacks like dried apricots, whole-wheat crackers, peanut butter, low-fat cheese, and low-sodium soup on hand.

- Encourage plenty of water or water-based fluids. Examples of water-based fluids are caffeine-free tea and coffee, soup, and low-fat or skim milk.

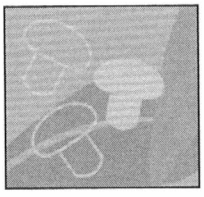
- Offer a meal plan that provides no more than 1,500 milligrams of sodium per day. Check the Nutrition Facts label for the number of milligrams of sodium in a food. You don't want to exceed a total of 65% Daily Value (DV) for sodium from all foods in a day.

- Offer a meal plan that meets the potassium recommendation of at least 4,700 milligrams a day with food. Offer an adequate number of daily servings of vegetables, fruits, and low-fat or fat-free milk products such as sweet potatoes, beet greens, tomatoes, bananas, prune juice and low-fat or fat-free yogurt.

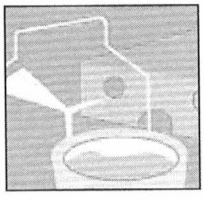
Mix Up Choices within Each Food Group



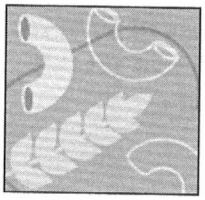
Focus on fruits. Offer a variety of fruits—whether fresh, frozen, canned, or dried—rather than fruit juice for most fruit choices. For a 2,000-calorie diet, your resident will need about 2 cups of fruit each day, for example 1 large banana and 1 large orange. If your resident needs 1,600 calories, he/she will need about 1 1/2 cups each day, for example 1 small apple and 1/2 cup strawberries.



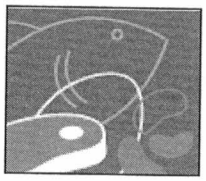
Vary your vegetables. Offer more dark green vegetables such as broccoli, kale, and other dark leafy greens; orange vegetables, such as carrots, sweet potatoes, pumpkin, and winter squash; and beans and peas, such as pinto beans, kidney beans, black beans, garbanzo beans, split peas, and lentils. For a 2,000-calorie diet, your resident will need about 2 1/2 cups of vegetables each day. If your resident needs 1,600 calories, he/she will need about 2 cups each day, for example, 1 medium baked potato, 1/2 cup cooked spinach, and 1/2 cup acorn squash.



Encourage calcium-rich foods. Offer 3 cups of low-fat or fat-free milk—or an equivalent amount of low-fat or fat-free yogurt and/or low-fat cheese (1 ½ ounces of cheese equals 1 cup of milk)—every day. If your resident is lactose intolerant, offer lactose-free milk products, yogurt and cheese. If your resident does not or cannot consume milk, select calcium-fortified foods and beverages.



Make half your grains whole. For a 2,000-calorie diet, your resident needs about 6 to 7 ounces of grains each day, and at least half should be whole-grain cereals, breads, crackers, rice, or pasta. One ounce is about 1 slice of bread, 1 cup of ready-to-eat breakfast cereal, or 1/2 cup of cooked rice or pasta. If your resident needs 1,600 calories, he/she will need about 5 ounces. Check that grains such as wheat, rice, oats, or corn are referred to as "whole" in the list of ingredients.

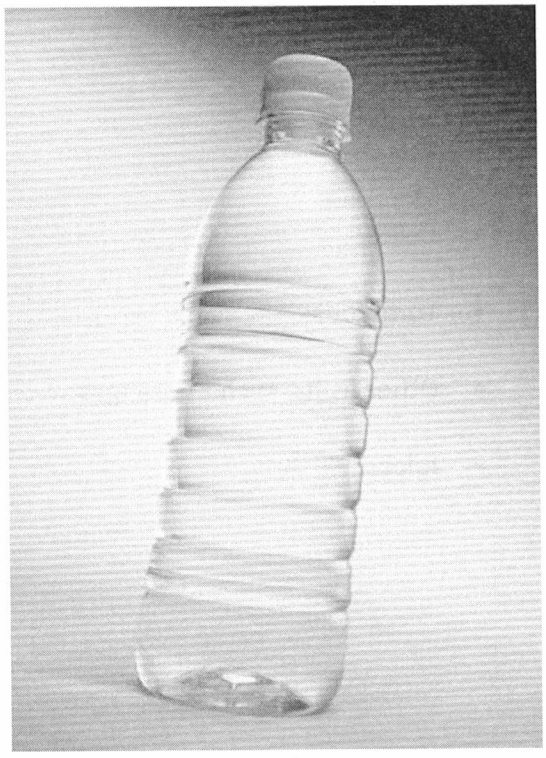


Go lean with protein. Choose lean meats and poultry to bake, broil, or grill. And vary the protein choices—with more fish, beans, peas, nuts, eggs, and seeds.

Know the limits on fats, salt, and sugars. Read the Nutrition Facts label on food packages. Look for foods low in saturated fats, cholesterol, and trans fats. Choose and prepare foods and beverages with little salt (sodium) and/or added sugars (caloric sweeteners).

HYDRATION

Water is another important part of basic nutrition. According to the Centers for Disease Control and Prevention (CDC), water assists your body with the following:



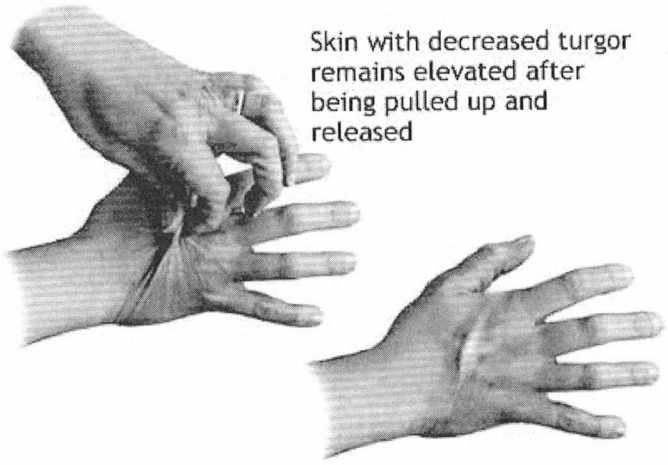
- Keeps the body temperature normal
- Lubricates and cushions joints
- Protects spinal cord and other sensitive tissues
- Gets rid of waste through urination, perspiration, and bowel movements

Getting enough water every day is necessary to stay healthy. As residents get older they are prone to become dehydrated and lose more water than they put back into their bodies. As a person gets older, he/she may have a decreased sense of thirst.

Signs of Dehydration

Speak to your supervisor if you feel a resident is not receiving enough fluid throughout the day. Some signs you may notice if a resident is dehydrated:

- Eyes that are sunken or dry
- Mouth that is dry
- Less active
- Lower amounts of urine output
- Skin changes
- Decreased skin turgor

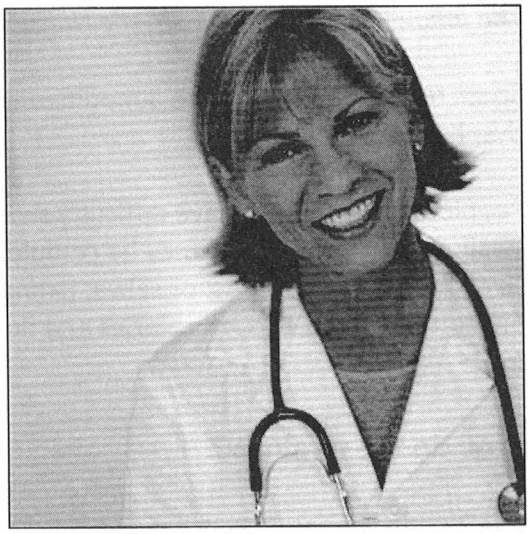


Hydration Options

Some residents may not like to drink water. Here are some alternative sources of hydration beyond a glass of water:

- Broth soups
- Melons
- Celery
- Tomatoes
- Other fruits, such as oranges
- Juices

MODIFIED DIETS



There may be times when a resident's physician has ordered a specific diet or meal plan for the resident to maintain.

Be sure to read carefully and follow the physician's orders for each resident if they require a modified diet.

Examples of modified diets may include:

- Sodium restrictions (e.g., no added salt)
- Calorie controlled diets
- Diabetic diets (there are many variations, including limiting concentrated sweets and use of exchange lists)
- Soft or mechanical soft diet (foods are soft or pureed to help with chewing and swallowing)
- Thickened liquids (liquids are thickened to reduce the risk of aspiration)
- Renal diet (for persons with kidney disease, usually includes limitations on sodium, fluids, potassium, protein, and other changes)

Do not attempt to provide a diet that you do not understand how to prepare. Mistakes in preparing modified diets can be dangerous. If you are unsure, ask the physician for clarification.

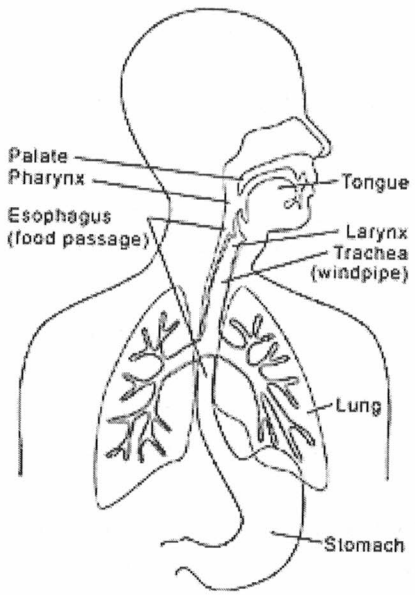
DYSPHAGIA

The following is adapted from the National Institutes of Health at www.nih.gov.

Some residents may require a modified diet due to difficulty swallowing, also known as dysphagia.

People with dysphagia have difficulty swallowing and may also experience pain while swallowing. Some people may be completely unable to swallow or may have trouble swallowing liquids, foods, or saliva. Eating then becomes a challenge. Often, dysphagia makes it difficult to take in enough calories and fluids to nourish the body.

How do we swallow?



Swallowing is a complex process. Some 50 pairs of muscles and many nerves work to move food from the mouth to the stomach. This happens in three stages. First, the tongue moves the food around in the mouth for chewing. Chewing makes the food the right size to swallow and helps mix the food with saliva. Saliva softens and moistens the food to make swallowing easier. During this first stage, the tongue collects the prepared food or liquid, making it ready for swallowing.

The second stage begins when the tongue pushes the food or liquid to the back of the mouth, which triggers a swallowing reflex that passes the food through the pharynx (the canal that connects the mouth with the esophagus). During this stage, the larynx (voice box) closes tightly and breathing stops to prevent food or liquid from entering the lungs.

The third stage begins when food or liquid enters the esophagus, the canal that carries food and liquid to the stomach. This passage through the esophagus usually occurs in about 3 seconds, depending on the texture or consistency of the food.

How does dysphagia occur?

Dysphagia occurs when there is a problem with any part of the swallowing process. Weak tongue or cheek muscles may make it hard to move food around in the mouth for chewing. Food pieces that are too large for swallowing may enter the throat and block the passage of air.

Other problems include not being able to start the swallowing reflex (a stimulus that allows food and liquids to move safely through the pharynx) because of a stroke or other nervous system disorder. People with these kinds of problems are unable to begin the muscle movements that allow food to move from the mouth to the stomach. Another difficulty can occur when weak throat muscles cannot move all of the food toward the stomach. Bits of food can fall or be pulled into the windpipe (trachea), which may result in lung infection.

What are some problems caused by dysphagia?

Dysphagia can be serious. Someone who cannot swallow well may not be able to eat enough of the right foods to stay healthy or maintain an ideal weight.

Sometimes, when foods or liquids enter the windpipe of a person who has dysphagia, coughing or throat clearing cannot remove it. Food or liquid that stays in the windpipe may enter the lungs and create a chance for harmful bacteria to grow. A serious infection (aspiration pneumonia) can result.

Swallowing disorders may also include the development of a pocket outside the esophagus caused by weakness in the esophageal wall. This abnormal pocket traps some food being swallowed. While lying down or sleeping, a person with this problem may draw undigested food into the pharynx. The esophagus may be too narrow, causing food to stick. This food may prevent other food or even liquids from entering the stomach.

What causes dysphagia?

Dysphagia has many causes. Any condition that weakens or damages the muscles and nerves used for swallowing may cause dysphagia. For example, people with diseases of the nervous system, such as cerebral palsy or Parkinson's disease, often have problems swallowing. Additionally, stroke or head injury may affect the coordination of the swallowing muscles or limit sensation in the mouth and throat. An infection or irritation can cause narrowing of the esophagus. People born with abnormalities of the swallowing mechanism may not be able to swallow normally. Infants who are born with a hole in the roof of the mouth (cleft palate) are unable to suck properly, which complicates nursing and drinking from a regular baby bottle.

In addition, cancer of the head, neck, or esophagus may cause swallowing problems. Sometimes the treatment for these types of cancers can cause dysphagia. Injuries of the head, neck, and chest may also create swallowing problems.

How is dysphagia treated?

There are different treatments for various types of dysphagia. First, doctors and speech-language pathologists who test for and treat swallowing disorders use a variety of tests that allow them to look at the parts of the swallowing mechanism. One test, called a fiber optic laryngoscopy, allows the doctor to look down the throat with a lighted tube. Other tests, including video fluoroscopy, which takes videotapes of a patient swallowing, and ultrasound, which produces images of internal body organs, can painlessly take pictures of various stages of swallowing.

Once the cause of the dysphagia is found, surgery or medication may help. If treating the cause of the dysphagia does not help, the doctor may have the patient see a speech-language pathologist who is trained in testing and treating swallowing disorders. The speech-language pathologist will test the person's ability to eat and drink and may teach the person new ways to swallow.

Treatment may involve muscle exercises to strengthen weak facial muscles or to improve coordination. For others, treatment may involve learning to eat in a special way. For example, some people may have to eat with their head turned to one side or looking straight ahead. Preparing food in a certain way or avoiding certain foods may help other people. For instance, those who cannot swallow liquids may need to add special thickeners to their drinks. Other people may have to avoid hot or cold foods or drinks.

For some, however, consuming foods and liquids by mouth may no longer be possible. These individuals must use other methods to nourish their bodies. Usually this involves a feeding system, such as a feeding tube, that bypasses the part of the swallowing mechanism that is not working normally.

Aspiration

Dysphagia can lead to aspiration, a condition in which food, fluids, or saliva enter the lungs rather than the stomach. In severe cases aspiration can lead to pneumonia. Here are some interventions to prevent aspiration:

1. Ask the resident to sit up whenever consuming food or fluids.
   When a resident reclines, the risk of choking is increased. Some find even leaning forward slightly facilitates better swallowing.

2. Verify allowable foods for newly admitted resident.
   Staff can help ensure safety when only foods the resident can consume easily are served. Check the physican's orders regarding dietary restrictions and modified diets.

3. Cut, chop, grind or puree foods as ordered.
   Serving the food at the table already cut into appropriately sized pieces or texture is important. Residents with cognitive impairment may not remember to cut foods as necessary.

4. Allow additional time for meals.
   Residents with swallowing difficulties may need extra time at meals. Don't rush them.

5. Serve meals in supervised areas.
   Residents with swallowing problems or who are at risk for aspiration should never eat without staff supervision. If eating alone, they may not be able to summon emergency help. Staff should be trained to perform the Heimlich maneuver.

6. Encourage the resident to put only a small amount of food in the mouth and place it in the mouth on the unaffected side. This will make it easier to control the food in the mouth, decreasing the possibility of choking.

7. Remind the resident to clear his mouth before taking another bite of food. Food may have a tendency to become lodged in the affected side of the mouth.

8. Provide the resident with adaptive devices for eating.
   It can be embarrassing for the resident when food is spilled or there are problems reaching for things on the table or using utensils, yet these are frequent problems for the resident who is post stroke. Providing adaptive devices such as rubber suction cups for dishes, rocker knifes, etc., can be very helpful.

9. Monitor the resident for any signs of aspiration or respiratory infection.
   Immediately report any signs of respiratory complications to the physician. Sounds of congestion, coughing, shortness of breath, malaise, fever should all be reported. Keep in mind that the elderly do not always spike a high fever or demonstrate dramatic signs of infection, even though illness could be present.

RESIDENT PREFERENCES

Designing a meal plan that meets the needs and preferences of your residents should go beyond simply calculating calories. When developing a nutrition/meal plan for your residents, it is important to consider the following factors:

- Physician orders
- Resident preferences
- Food allergies
- Utilize all the food groups
- Caloric intake
- Capabilities of your staff

Here are just a few examples of resident preferences to consider:

- Religious or spiritual preferences
- Cultural preferences
- Favorite foods
- Foods a resident doesn't like
- Special meals for birthdays and holidays
- Time of day a resident likes to eat
- Family traditions (e.g., popcorn while watching movies every Saturday)

FOODBORNE ILLNESS

The following information on foodborne illness is adapted from the Centers for Disease Control and Prevention (CDC) publication Foodborne Infections – General Information.

Foodborne disease is caused by consuming contaminated foods or beverages. Many different disease causing microbes, or pathogens, can contaminate foods, so there are many different foodborne infections. In addition, poisonous chemicals, or other harmful substances can cause foodborne diseases if they are present in food.

More than 250 different foodborne diseases have been described. Most of these diseases are infections, caused by a variety of bacteria, viruses, and parasites that can be foodborne. Other diseases are poisonings, caused by harmful toxins or chemicals that have contaminated the food, for example, poisonous mushrooms. These different diseases have many different symptoms, so there is no one "syndrome" that is foodborne illness. However, the microbe or toxin enters the body through the gastrointestinal tract, and often causes the first symptoms there, so nausea, vomiting, abdominal cramps and diarrhea are common symptoms in many foodborne diseases.

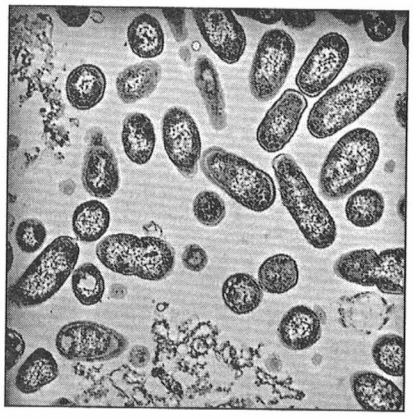
Many microbes can spread in more than one way, so we cannot always know that a disease is foodborne. The distinction matters, because public health authorities need to know how a particular disease is spreading to take the appropriate steps to stop it. For example, Escherichia coli O157:H7 infections can spread through contaminated food, contaminated drinking water, contaminated swimming water, and from toddler to toddler at a day care center. Depending on which means of spread caused a case, the measures to stop other cases from occurring could range from removing contaminated food from stores, chlorinating a swimming pool, or closing a child day care center.

The Most Common Foodborne Diseases

The most commonly recognized foodborne infections are those caused by the bacteria Campylobacter, Salmonella, and E. coli O157:H7, and by a group of viruses called calicivirus, also known as the Norwalk and Norwalk-like viruses.

Campylobacter is a bacterial pathogen that causes fever, diarrhea, and abdominal cramps. It is the most commonly identified bacterial cause of diarrheal illness in the world. These bacteria live in the intestines of healthy birds, and most raw poultry meat has Campylobacter on it. Eating undercooked chicken, or other food that has been contaminated with juices dripping from raw chicken is the most frequent source of this infection.

Salmonella



Salmonella is also a bacterium that is widespread in the intestines of birds, reptiles and mammals. It can spread to humans via a variety of different foods of animal origin. The illness it causes, salmonellosis, typically includes fever, diarrhea and abdominal cramps. In persons with poor underlying health or weakened immune systems, it can invade the bloodstream and cause life-threatening infections.

E. coli O157:H7

E. coli O157:H7 is a bacterial pathogen that has a reservoir in cattle and other similar animals. Human illness typically follows consumption of food or water that has been contaminated with microscopic amounts of cow feces. The illness it causes is often a severe and bloody diarrhea and painful abdominal cramps, without much fever. In 3% to 5% of cases, a complication called hemolytic uremic syndrome (HUS) can occur several weeks after the initial symptoms. This severe complication includes temporary anemia, profuse bleeding, and kidney failure.

Calicivirus

Calicivirus, or Norwalk-like virus is an extremely common cause of foodborne illness, though it is rarely diagnosed, because the laboratory test is not widely available. It causes an acute gastrointestinal illness, usually with more vomiting than diarrhea, which resolves within two days. Unlike many foodborne pathogens that have animal reservoirs, it is believed that Norwalk-like viruses spread primarily from one infected person to another. Infected kitchen workers can contaminate a salad or sandwich as they prepare it, if they have the virus on their hands. Infected fishermen have contaminated oysters as they harvested them.

Some common diseases are occasionally foodborne, even though they are usually transmitted by other routes. These include infections caused by Shigella, hepatitis A, and the parasites Giardia lamblia and Cryptosporidia. Even strep throats have been transmitted occasionally through food.

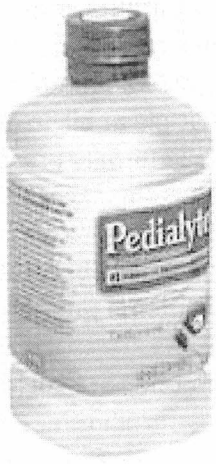
Toxins

In addition to disease caused by direct infection, some foodborne diseases are caused by the presence of a toxin in the food that was produced by a microbe in the food. For example, the bacterium Staphylococcus aureus can grow in some foods and produce a toxin that causes intense vomiting. The rare but deadly disease botulism occurs when the bacterium Clostridium botulinum grows and produces a powerful paralytic toxin in foods. These toxins can produce illness even if the microbes that produced them are no longer there.

Other toxins and poisonous chemicals can cause foodborne illness. People can become ill if a pesticide is inadvertently added to a food, or if naturally poisonous substances are used to prepare a meal. Every year, people become ill after mistaking poisonous mushrooms for safe species, or after eating poisonous reef fishes.

After Microbes Are Ingested

After they are swallowed, there is a delay, called the incubation period, before the symptoms of illness begin. This delay may range from hours to days, depending on the organism, and on how many of them were swallowed. During the incubation period, the microbes pass through the stomach into the intestine, attach to the cells lining the intestinal walls, and begin to multiply there. Some types of microbes stay in the intestine, some produce a toxin that is absorbed into the bloodstream, and some can directly invade the deeper body tissues. The symptoms produced depend greatly on the type of microbe. Numerous organisms cause similar symptoms, especially diarrhea, abdominal cramps, and nausea. There is so much overlap that it is rarely possible to say which microbe is likely to be causing a given illness unless laboratory tests are done to identify the microbe, or unless the illness is part of a recognized outbreak.



There are many different kinds of foodborne diseases and they may require different treatments, depending on the symptoms they cause. Illnesses that are primarily diarrhea or vomiting can lead to dehydration if the person loses more body fluids and salts (electrolytes) than they take in. Replacing the lost fluids and electrolytes and keeping up with fluid intake are important. If diarrhea is severe, the physician may recommend an oral rehydration solution such as Ceralyte, Pedialyte or Oralyte, to replace the fluid losses and prevent dehydration. Sports drinks such as Gatorade do not replace the losses correctly and should not be used for the treatment of diarrheal illness. Preparations of bismuth subsalicylate (e.g., Pepto-Bismol) can reduce the duration and severity of simple diarrhea and may be prescribed by the resident's physician. If diarrhea and cramps occur, without bloody stools or fever, taking an antidiarrheal medication may provide symptomatic relief, but these medications should be avoided if there is high fever or blood in the stools because they may make the illness worse.

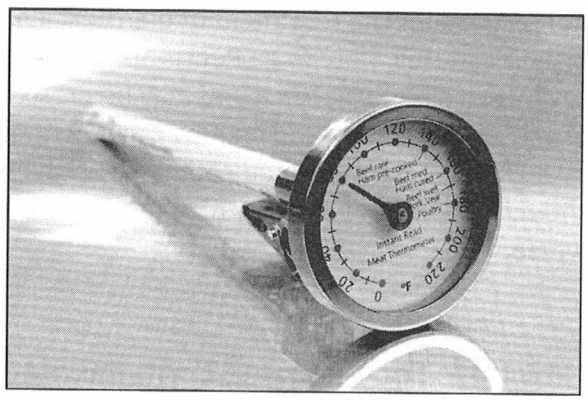
How Does Food Become Contaminated?

We live in a microbial world, and there are many opportunities for food to become contaminated as it is produced and prepared. Many foodborne microbes are present in healthy animals (usually in their intestines) raised for food. Meat and poultry carcasses can become contaminated during slaughter by contact with small amounts of intestinal contents. Similarly, fresh fruits and vegetables can be contaminated if they are washed or irrigated with water that is contaminated with animal manure or human sewage. Some types of Salmonella can infect a hen's ovary so that the internal contents of a normal looking egg can be contaminated with Salmonella even before the shell in formed. Oysters and other filter feeding shellfish can concentrate Vibrio bacteria that are naturally present in sea water, or other microbes that are present in human sewage dumped into the sea.

Later in food processing, other foodborne microbes can be introduced from infected humans who handle the food, or by cross contamination from some other raw agricultural product. For example, Shigella bacteria, hepatitis A virus and Norwalk virus can be introduced by the unwashed hands of food handlers who are themselves infected. In the kitchen, microbes can be transferred from one food to another food by using the same knife, cutting board or other utensil to prepare both without washing the surface or utensil in between. A food that is fully cooked can become recontaminated if it touches other raw foods or drippings from raw foods that contain pathogens.

The way that food is handled after it is contaminated can also make a difference in whether or not an outbreak occurs. Many bacterial microbes need to multiply to a larger number before enough are present in food to cause disease. Given warm moist conditions and an ample supply of nutrients, one bacterium that reproduces by dividing itself every half hour can produce 17 million progeny in 12 hours. As a result, lightly contaminated food left out overnight can be highly infectious by the next day. If the food were refrigerated promptly, the bacteria would not multiply at all. In general, refrigeration or freezing prevents virtually all bacteria from growing but generally preserves them in a state of suspended animation. This general rule has a few surprising exceptions. Two foodborne bacteria, Listeria monocytogenes and Yersinia enterocolitica can actually grow at refrigerator temperatures. High salt, high sugar or high acid levels keep bacteria from growing, which is why salted meats, jam, and pickled vegetables are traditional preserved foods.

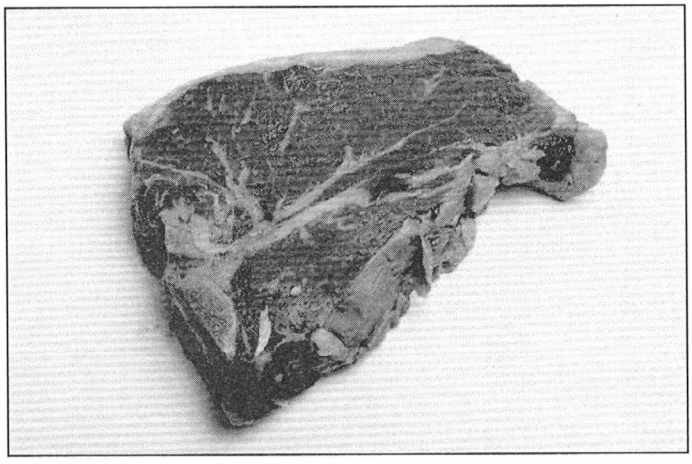
Microbes are killed by heat. If food is heated to an internal temperature above 160^0 F, or 78^o C, for even a few seconds this sufficient to kill parasites, viruses or bacteria, except for the Clostridium bacteria, which produce a heat-resistant form called a spore. Clostridium spores are killed only at temperatures above boiling. This is why canned foods must be cooked to a high temperature under pressure as part of the canning process.



The toxins produced by bacteria vary in their sensitivity to heat. The staphylococcal toxin which causes vomiting is not inactivated even if it is boiled. Fortunately, the potent toxin that causes botulism is completely inactivated by boiling.

Foods Most Associated with Foodborne Illness

Raw foods of animal origin are the most likely to be contaminated; that is, raw meat and poultry, raw eggs, unpasteurized milk, and raw shellfish. Because filter-feeding shellfish strain microbes from the sea over many months, they are particularly likely to be contaminated if there are any pathogens in the seawater. Foods that mingle the products of many individual animals, such as bulk raw milk, pooled raw eggs, or ground beef, are particularly hazardous because a pathogen present in any one of the animals may contaminate the whole batch. A single hamburger may contain meat from hundreds of animals. A single restaurant omelet may contain eggs from hundreds of chickens. A glass of raw milk may contain milk from hundreds of cows. A broiler chicken carcass can be exposed to the drippings and juices of many thousands of other birds that went through the same cold water tank after slaughter.



Fruits and vegetables consumed raw are a particular concern. Washing can decrease but not eliminate contamination, so the consumers can do little to protect themselves. Recently, a number of outbreaks have been traced to fresh fruits and vegetables that were processed under less than sanitary conditions.

These outbreaks show that the quality of the water used for washing and chilling the produce after it is harvested is critical. Using water that is not clean can contaminate many boxes of produce. Fresh manure used to fertilize vegetables can also contaminate them. Alfalfa sprouts and other raw sprouts pose a particular challenge, as the conditions under which they are sprouted are ideal for growing microbes as well as sprouts, and because they are eaten without further cooking. That means that a few bacteria present on the seeds can grow to high numbers of pathogens on the sprouts. Unpasteurized fruit juice can also be contaminated if there are pathogens in or on the fruit that is used to make it.

People More Likely to Contract a Foodborne Illness

Some persons at particularly high risk should take more precautions. Pregnant women, the elderly, and those weakened immune systems are at higher risk for severe infections such as Listeria and should be particularly careful not to consume undercooked animal products. They should avoid soft French style cheeses, pates, uncooked hot dogs and sliced deli meats, which have been sources of Listeria infections. Persons at high risk should also avoid alfalfa sprouts and unpasteurized juices.

A bottle-fed infant is at higher risk for severe infections with Salmonella or other bacteria that can grow in a bottle of warm formula if it is left at room temperature for many hours. Particular care is needed to be sure the baby's bottle is cleaned and disinfected and that leftover milk formula or juice is not held in the bottle for many hours.

Persons with liver disease are susceptible to infections with a rare but dangerous microbe called Vibrio vulnificus, found in oysters. They should avoid eating raw oysters.

GENERAL FOOD SAFETY PRACTICES

Each employee that works in the food service area plays a key part in preventing foodborne illness. It is important that these staff members are in good health and practice proper hygiene. There are some general guidelines to follow to insure safety in food service. An important part of your job is to protect the food you prepare and to stop harmful organisms from spreading. You have a responsibility to provide food that is not only healthy and delicious but is also safe to eat.

Basic Precautions

A few simple precautions can reduce the risk of foodborne diseases:

- **COOK** meat, poultry and eggs thoroughly. Using a thermometer to measure the internal temperature of meat is a good way to be sure that it is cooked sufficiently to kill bacteria. For example, ground beef should be cooked to an internal temperature of 160o F. Eggs should be cooked until the yolk is firm.

- **SEPARATE**: Don't cross-contaminate one food with another. Avoid cross-contaminating foods by washing hands, utensils, and cutting boards after they have been in contact with raw meat or poultry and before they touch another food. Put cooked meat on a clean platter, rather back on one that held the raw meat.

- **CHILL**: Refrigerate leftovers promptly. Bacteria can grow quickly at room temperature, so refrigerate leftover foods if they are not going to be eaten within 4 hours. Large volumes of food will cool more quickly if they are divided into several shallow containers for refrigeration.

- **CLEAN**: Wash produce. Rinse fresh fruits and vegetables in running tap water to remove visible dirt and grime. Remove and discard the outermost leaves of a head of lettuce or cabbage.

- Because bacteria can grow well on the cut surface of fruit or vegetable, be careful not to contaminate these foods while slicing them up on the cutting board, and avoid leaving cut produce at room temperature for many hours.

- Don't be a source of foodborne illness yourself. Wash your hands with soap and water before preparing food. Avoid preparing food for others if you yourself have a diarrheal illness.

- **REPORT**: Report suspected foodborne illnesses to your local health department. The local public health department is an important part of the food safety system. Often calls from concerned citizens are how outbreaks are first detected. If a public health

official contacts you to find our more about an illness you had, your cooperation is important. In public health investigations, it can be as important to talk to healthy people as to ill people. Your cooperation may be needed even if you are not ill.

Do Not Work While Ill

If you are ill, you can pass on infectious agents in to the food, so it is important that you never prepare food if you are ill.

You should not work if you have:

- fever
- sore throat
- diarrhea
- vomiting
- yellow skin (jaundice)
- dark tea colored urine

Always notify your supervisor immediately if you are not feeling well!

It is important to be well groomed when working in the kitchen. One consideration is the fingernails--they should be clean and short. Excessively long fingernails set up an opportunity for microorganisms to grow and contaminate food. According to the FDA, a food employee should not wear fingernail polish or artificial fingernails when working with exposed food, unless wearing intact gloves in good repair.

Gloves are an important part of food service. However, gloves can also become contaminated. It is vital to always wash your hands **before** and **after** gloving. You should change gloves in between food tasks. It is unsafe to wear jewelry on arms and hands while preparing food. It is also important to wear clean outer clothing to prevent contamination of food along with other cooking utensils.

Another general employee practice is to wear hair restraints such as hats, hair coverings or nets, facial hair restraints and clothing that cover body hair in order to keep ones hair from contacting exposed food and other kitchenware.

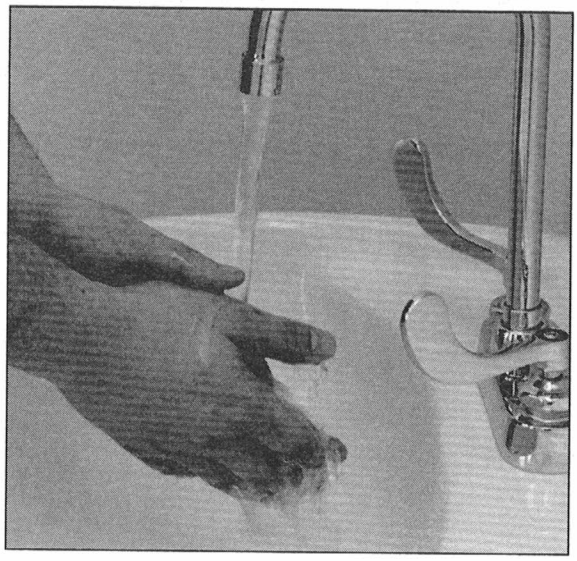
When consuming beverages in food service areas it is important to make sure that the container has a covered lid and that the beverage container itself does not become contaminated.

When working in the food service area for an assisted living or residential care Community, it is always important to be safe and clean. Always make sure to practice good hygiene and keep your hands, tools and surfaces clean.

Do not smoke or use any kind of tobacco while preparing food. Your saliva will transfer from your hands to the food causing the food to become contaminated. It is not appropriate to use tobacco products in food service areas. Only smoke in designated areas and on your break period. Remember to wash your hands after smoking or using tobacco products.

Do not work if you have infected cuts, abscesses or any type of boils.

HANDWASHING



One of the most important things one can do to prevent food poisoning is proper hand washing. The best way to wash your hands is to follow these simple steps.

1. Start by placing your hands under warm water.
2. Lather your hands and scrub for at least 15 seconds.
3. Rinse your hands allowing a downward flow of water into the sink.
4. Then dry your hands using a paper towel or a hand dryer.

When should you wash your hands?

- **Before** you touch anything used to prepare food.
- **Before** you touch food.
- **Before** you put on gloves, and **after** you remove gloves.

- **After** touching raw meat, poultry and fish.
- **After** handling trash/garbage.
- **After** handling dirty dishes.
- **After** cleaning or using chemicals.

Washing your hands after touching your face or nose is very important. Staphylococcus (Staph) is bacteria carried on the hands and face as well as the nose of many healthy people. It creates a toxin that is not destroyed by cooking or freezing, and is very potent.

Double Washing

There are times when it is necessary to double wash your hands. This basically means you will go through the hand washing technique twice before drying your hands.

When should you DOUBLE wash your hands?

- When you **first** arrive to work
- **After** using the restroom
- **After** you have blown your nose, coughed, sneezed, or touched your nose or mouth
- **After** eating or drinking from an open beverage
- **After** smoking or using tobacco products

FOOD TEMPERATURES

The temperature that food is stored, cooked to, and served at is extremely important. The way to prevent foodborne illness is to keep foods safe and out of the "Danger Zone."

The Danger Zone

Bacteria grow most rapidly in the range of temperatures between 40°F and 140°F

According to the U.S. Department of Agriculture:

Leaving food out too long at room temperature can cause bacteria (such as Staphylococcus aureus, Salmonella Enteritidis, Escherichia coli O157:H7, and Campylobacter) to grow to dangerous levels that can cause illness. Bacteria grow most rapidly in the range of temperatures between 40°F and 140°F, doubling in number in as little as 20 minutes. This range of temperatures is often called the "Danger Zone."

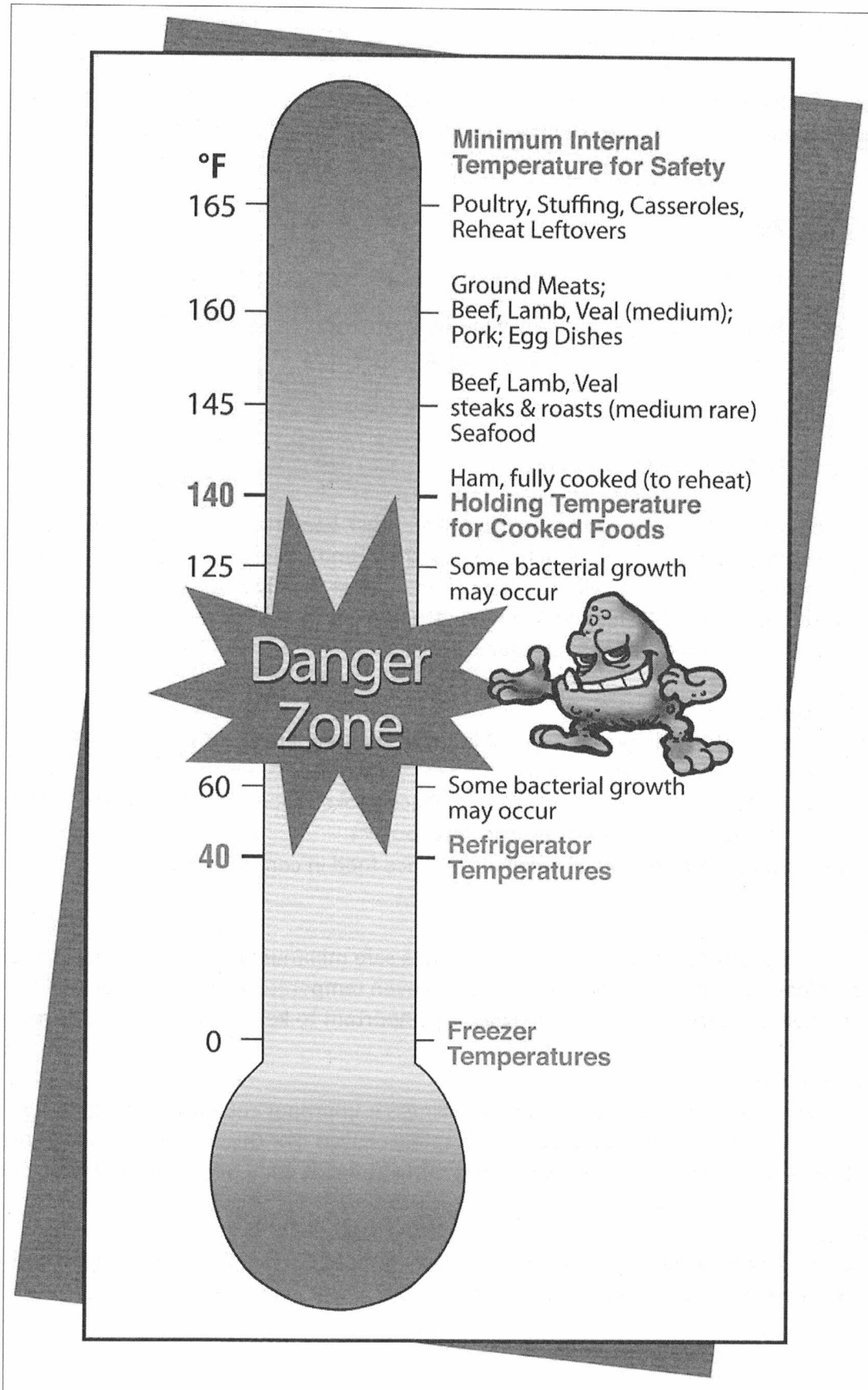
Keep Food Out of the "Danger Zone"
Never leave food out of refrigeration over 2 hours. If the temperature is above 90 °F, food should not be left out more than 1 hour.

- **Keep hot food hot** — at or above 140°F. Place cooked food in chafing dishes, preheated steam tables, warming trays, and/or slow cookers.
- **Keep cold food cold** — at or below 40°F. Place food in containers on ice.

Cooking
Raw meat and poultry should always be cooked to a safe minimum internal temperature (see graphic). When roasting meat and poultry, use an oven temperature no lower than 325 °F. If you aren't going to serve hot food right away, it's important to keep it at 140 °F or above.

Storing Leftovers
One of the most common causes of foodborne illness is improper cooling of cooked foods. Bacteria can be reintroduced to food after it is safely cooked. For this reason leftovers must be put in shallow containers for quick cooling and refrigerated at 40 °F or below within two hours.

Reheating
Foods should be reheated thoroughly to an internal temperature of 165 °F or until hot and steaming. In the microwave oven, cover food and rotate so it heats evenly.


°F
165
160
145
140
125
60
40
0
Minimum Internal Temperature for Safety
Poultry, Stuffing, Casseroles, Reheat Leftovers
Ground Meats; Beef, Lamb, Veal (medium); Pork; Egg Dishes
Beef, Lamb, Veal steaks & roasts (medium rare) Seafood
Ham, fully cooked (to reheat)
Holding Temperature for Cooked Foods
Some bacterial growth may occur
Danger Zone
Some bacterial growth may occur
Refrigerator Temperatures
Freezer Temperatures

Thermometers

Cooking food at the correct temperature is extremely important. When cooking food, it may appear to be ready to eat, but if it has not reached the appropriate temperature, it is not safe. This is why every kitchen should have appropriate food thermometers for food safety.

There are three main cooking thermometers. Dial oven-safe, dial instant-read, and digital instant-read.

A **dial oven-safe thermometer** is inserted into the food from the start of the cooking and remains until the food is cooked thoroughly. This type of thermometer is best in large cuts of meats and should not be used for boneless or thin foods.

Dial instant-read thermometers are not made to stay in the food while cooking. You use this type of thermometer towards the end of cooking and at the thickest part of the meat. Make sure you are not placing the thermometer on the bone as this will give you a false reading.

A digital instant-read thermometer also does not remain in the food while cooking. Like a dial instant-read, you check the temperature toward the end of cooking. You should place the probe at the thickest point or center of the food for about 10 seconds to receive an accurate display. This type of thermometer device is valuable to use for checking the temperature of thin food and is easier to read compared to the dial thermometers.

To make sure foods have reached the appropriate temperature, use the correct thermometer. It is best to use a thermometer that will read from 0°F all the way to 220°F.

Important thermometer tips:

- Check the internal temperature of the food towards the end of the cooking time.
- Place the thermometer in the thickest part of the meat or in the center to get a proper reading of the temperature. Do not touch the bone with the thermometer to prevent a false reading.
- When taking the temperature of large amounts of food like a big piece of meat, take it in two or more locations to provide a more accurate account.
- Wash the thermometer after each use.

Always maintain hot foods at a minimum of 141°F otherwise it will be in the danger zone.

Cooling Foods

Here are some suggestions to ensure proper cooling of foods:

- If you are cooling a larger roast, it is a good idea to cut into smaller pieces first.
- You can cool soft foods by pouring into a shallow metal pan. Use a sheet pan for very thick food like re-fried beans.
- When cooling larger foods, use an ice bath in the sink to assist in cooling the larger amounts quickly before refrigerating.
- Once food cools to 40°F you can move to a larger container and cover it. Air in the refrigerator must be able to move around the food.
- Food must cool from 140°F to 70°F within two hours, and then from 70°F to 41°F within four hours.
- If you desire to refrigerate the food that has already been prepared, it is important for food to cool quickly in order to transfer the food to an appropriate labeled container and be placed in the refrigerator. Food should not sit around at elevated temperatures.
- Food that are really hot or large need to be cooled quickly. Watch the following video for examples that demonstrate this method of cooling food.

Food Storage

According to the USDA, it is necessary to store foods at the appropriate temperature. One should check the temperature of both the refrigerator and freezer with a thermometer made for appliances. The temperature should be set at 40°F or below for the refrigerator and 0°F or below for the freezer.

Once appropriately cooled, food must be stored and labeled properly. It should be labeled by preparation date, expiration date, or date the commercial package was opened. Typically food can be stored for seven days, when the temperature remains 40°F or below. Always follow the Community policy already established.

Storing leftovers
When storing leftovers, place food into a shallow container and immediately put into the refrigerator or in the freezer for quick cooling. It is a good idea to use the leftovers within four days, otherwise it must be discarded. If in doubt, throw it out!

Refreezing

There are times when it is ok to refreeze foods and other times that are not. If raw meat or poultry has been defrosted properly in the refrigerator, then it may be placed in the freezer again without harm. However, if thawed by other methods, such as in the sink, it should be cooked prior to being refrozen.

CROSS-CONTAMINATION

During both preparation and storage it is very important to prevent cross contamination. Cross contamination occurs when germs from raw or unclean food get into foods that are ready to serve or will not be cooked again before you serve them. This can cause food poisoning.

During Preparation

There are several steps that you can take to avoid/prevent cross contamination during preparation:

- Wash, rinse and sanitize the cutting surface.
- Wash all utensils and knives used in preparation every time you finish with a task or between preparing different foods.
- Do NOT sample while preparing food. Saliva from your mouth will transfer over to contaminate the food you are preparing.
- Use a sanitized spoon or spatula to mix food; do not use your hands.
- Use a clean utensil instead of your hands for serving foods.

During Storage

There are several steps that you can take to avoid/prevent cross contamination during storage:

- Store meats, fish, and poultry on the bottom of the refrigerator and make sure none of the juices drip or leak onto other foods.
- Store eggs in their original container and keep inside the actual refrigerator not in the door.
- Keep different types of raw meat separate from each other.
- Store unwashed food or raw food away from ready-to-eat food.
- Never store foods that will not be cooked in the same container with raw meat, fish, or poultry.

- Keep different items separate from one another to prevent cross contamination. Make sure everything is in a proper container that is sealed and labeled.

- Wash your hands between handling raw meat and foods that will not be cooked before eating.

While Serving

There are also proper steps to prevent cross contamination during serving:

- Keep different types of food items separate.

- Use clean utensils instead of your hands for the food.

- Never reuse a plate or utensils that previously held **raw meat, poultry, or seafood** for serving — unless they've been washed first in hot, soapy water. Otherwise, you can **spread bacteria** from the raw juices to your cooked or ready-to-eat food. This is particularly important to remember when serving cooked foods from the grill.

Washing Hands

As we discussed earlier, it is essential to wash your hands before and after handling any food. Your hands can spread any type of bacteria that are present, either from the food you are working with or the environment around you. You should begin any food preparation with clean hands that you have washed with warm water and soap for about 15 seconds.

CLEAN AND SANITIZE

Another effective way to prevent cross contamination is to make sure that all our utensils and work surfaces are washed, rinsed, and sanitized properly between each use. Keeping everything clean and sanitized is an essential way to prevent cross contamination and foodborne illness. Make sure that all your utensils and work surfaces are washed, rinsed, and sanitized properly between each use.

WASH in hot soapy water

RINSE in clean hot water

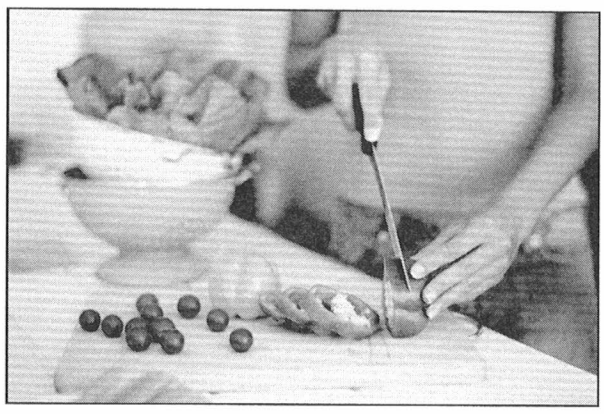
SANITIZE with freshly prepared sanitizer

All three are important for safe food handling!

A common sanitizer is 1 tablespoon of bleach per one gallon of water. Never guess on the measurements. Always use a measuring tool to make sure you are getting the exact proportions. Always clean your food equipment safely. Refer to the manufacturer's instructions for proper cleaning. Never hesitate to contact your supervisor for clarification.

The word, sanitize, means to make something clean or sterile. Remember to always read and follow all directions on the label. (Note: only products that display an EPA registration number on the label are accepted disinfectants or sanitizers.)

The steps you should take to properly clean and sanitize your cutting board:



- Wash the cutting board with hot soapy water
- Sanitize by means of using a diluted chlorine bleach solution. (No more than 1 tablespoon of unscented liquid bleach per one gallon of water.)
- Let the bleach solution stand on the surface of the cutting board for 3 – 5 minutes.
- Finally rinse and dry with a clean paper towel.

Surfaces may also appear to be clean, but that doesn't mean it is free of bacteria that can cause foodborne illness. Frequent cleaning of hands, cutting boards, utensils and countertops can help prevent germs from spreading.

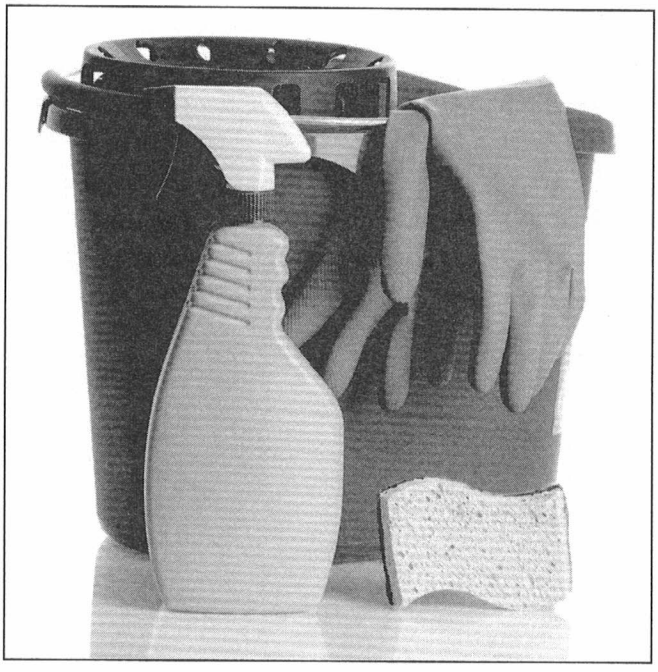
Some other important ways to keep the kitchen and the food you prepare safe and clean is to frequently do the following:

- Wash dish cloths.
- Clean and disinfect sinks and often-touched kitchen surfaces; for instance, handles on refrigerators, dishwashers, ovens, drawers and cabinets, microwaves, and faucets.
- Keep the inside of the freezer, refrigerator and microwave ovens clean.

CHEMICALS IN THE FOOD SERVICE AREA

Chemicals can pose a danger in the food service area.

- Never use a chemical that you do not understand the full directions. If you have any questions, always consult with your supervisor.
- Make sure all chemicals are appropriately labeled.
- Store all chemicals in an appropriate location away from food. This is not just recommended but may be required by state regulations. This is also important to prevent accidental chemical poisoning.
- Always read the labels before use of any products, especially if it may be poisonous.
- Maintain chemical products in their original containers or bottles.
- Food containers such as cups, bottles, or jars should NOT be used to store chemical products.
- Never combine household products. This can result in toxic gases.
- Wear gloves to protect your hands when using chemicals to clean.



OTHER HAZARDS

Bacteria and other toxins such as chemicals are not the only hazards in the kitchen. This is why keeping a safe working environment in the kitchen also includes storing knives and other sharp objects in their proper place, and keeping the walkways clear.

Pests can also pose as a hazard in our food service areas. It is important that we are alert to any signs of infestation from rodents, cockroaches, or other insects. If you notice any infestation, report this to your supervisor immediately! One of the best ways to prevent infestation is by keeping the food service areas clean and organized.