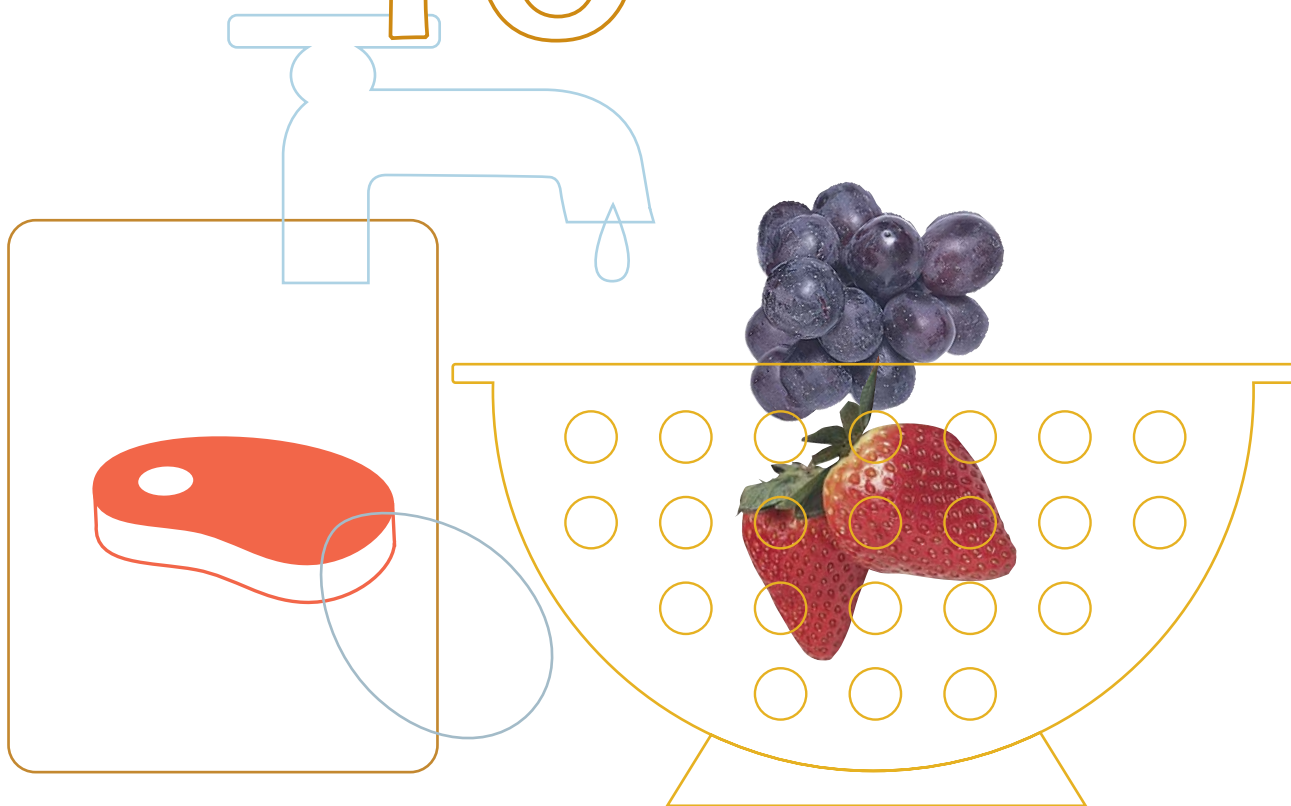


chapter 10



Food Safety

OVERVIEW

Avoiding foods that are contaminated with harmful bacteria, viruses, parasites, toxins, and chemical and physical contaminants are vital for healthful eating. The signs and symptoms of foodborne illness range from gastrointestinal symptoms, such as upset stomach, diarrhea, fever, vomiting, abdominal cramps, and dehydration, to more severe systemic illness, such as paralysis and meningitis. It is estimated that every year about 76 million people in the United States become ill from pathogens in food; of these, about 5,000 die. Consumers can take simple measures to reduce their risk of foodborne illness, especially in the home.

DISCUSSION

The most important food safety problem is microbial foodborne illness. All those who handle food, including farmers, food producers, individuals who work in markets and food service establishments, and other food preparers, have a responsibility to keep food as safe as possible. To keep food safe, people who prepare food should clean hands, food contact surfaces, and fruits and vegetables; separate raw, cooked, and ready-to-eat foods; cook foods to a safe internal temperature; chill perishable food promptly; and defrost food properly. For more important information on cooking, cleaning, separating, and chilling, see www.fightbac.org.



Consumers can take simple measures to reduce their risk of foodborne illness, especially in the home.

When preparing and consuming food, it is essential to wash hands often, particularly before and after preparing food, especially after handling raw meat, poultry, eggs, or seafood. A good hand washing protocol includes wetting hands; applying soap; rubbing hands vigorously together for 20 seconds; rinsing hands thoroughly under clean, running warm water; and drying hands completely using a clean disposable or cloth towel.

Washing may be the only method that consumers have to reduce pathogen load on fresh produce that will not be either peeled or subsequently cooked. A good protocol for washing fresh fruits and vegetables includes removing and discarding outer leaves, washing produce just before cooking or eating, washing under running potable water, scrubbing with a clean brush or with hands, and drying the fruits or vegetables using a clean disposable or cloth towel. Free moisture on produce may promote survival and growth of microbial populations. Therefore, drying the food is critical if the item will not be eaten or cooked right away.

People should read the labels of bagged produce to determine if it is ready-to-eat. Ready-to-eat, prewashed bagged produce can be used without further washing if kept refrigerated and used by the “use-by” date. If desired, prewashed, ready-to-eat produce can be washed again.

Raw meat and poultry should not be washed because this creates the danger of cross-contamination and is not necessary. Washing these foods can allow most bacteria that are present on the surface of the meat or poultry to spread to ready-to-eat foods, kitchen utensils, and counter surfaces.

KEY RECOMMENDATIONS

- To avoid microbial foodborne illness:
 - Clean hands, food contact surfaces, and fruits and vegetables. Meat and poultry should *not* be washed or rinsed.
 - Separate raw, cooked, and ready-to-eat foods while shopping, preparing, or storing foods.
 - Cook foods to a safe temperature to kill microorganisms.
 - Chill (refrigerate) perishable food promptly and defrost foods properly.
 - Avoid raw (unpasteurized) milk or any products made from unpasteurized milk, raw or partially cooked eggs or foods containing raw eggs, raw or undercooked meat and poultry, unpasteurized juices, and raw sprouts.

Key Recommendations for Specific Population Groups

- *Infants and young children, pregnant women, older adults, and those who are immunocompromised.* Do not eat or drink raw (unpasteurized) milk or any products made from unpasteurized milk, raw or partially cooked eggs or foods containing raw eggs, raw or undercooked meat and poultry, raw or undercooked fish or shellfish, unpasteurized juices, and raw sprouts.
- *Pregnant women, older adults, and those who are immunocompromised:* Only eat certain deli meats and frankfurters that have been reheated to steaming hot.

It is important to separate raw, cooked, and ready-to-eat foods while shopping, preparing, or storing. This prevents cross-contamination from one food to another. In addition, refrigerator surfaces can become contaminated from high-risk foods such as raw meats, poultry, fish, uncooked hot dogs, certain deli meats, or raw vegetables. If not cleaned, contaminated refrigerator surfaces can, in turn, serve as a vehicle for contaminating other foods.

Uncooked and undercooked meat, poultry and eggs and egg products are potentially unsafe. Raw meat, poultry and eggs should always be cooked to a safe internal temperature (see fig. 5). The best way to tell if meat, poultry and egg dishes are cooked safely is to use a food thermometer. Leftover refrigerator foods should also be reheated to the proper internal temperature. Bacteria grow

most rapidly in the range of 40°F and 140°F. To keep food out of this danger zone, keep cold food cold (below 40°F) and hot food hot (above 140°F). Figure 5 provides information for temperature rules for proper cooking and food handling. Proper cooking makes most uncooked foods safe.

The refrigerator should be set at no higher than 40°F and the freezer at 0°F, and these temperatures should be checked with an appliance thermometer. Refrigerated leftovers may become unsafe within 3 to 4 days. Despite the appearance of a food, it may not be safe to eat. Not all bacterial growth causes a food's surface to discolor or smell bad. It may be unsafe to taste fresh or leftover food items when there is any doubt about their safety. Safe disposal of the food is indicated if there is a question about whether or not a food is safe to eat. "If in doubt—throw it out."

Considerations for Specific Population Groups

Some people may be at high risk for developing foodborne illness. These include pregnant women and their fetuses, young children, older adults, people with weakened immune systems, and individuals with certain chronic illnesses. These people should pay extra attention to food safety advice.

For example, pregnant women, older adults, and those who are immunocompromised are at risk of developing listeriosis, a potentially life-threatening illness caused by the bacterium *Listeria monocytogenes*. Some deli meats and frankfurters that have not been reheated to steaming hot and some ready-to-eat foods are associated with listeriosis and pose a high-risk to certain individuals. All these foods should be heated to a safe internal temperature. In addition, these individuals should take special care not to eat or drink raw (unpasteurized) milk or any products made from unpasteurized milk (such as some soft cheeses), raw or partially cooked eggs or foods containing raw eggs, raw or undercooked meat and poultry, unpasteurized juices, and raw sprouts. They should also avoid raw or undercooked fish or shellfish.

New information on food safety is constantly emerging. Recommendations and precautions for people at high risk are updated as scientists learn more about preventing foodborne illness. Individuals in high-risk categories should seek guidance from a healthcare provider. In addition, up-to-date information is available at the Government's food safety website at www.foodsafety.gov.

FIGURE 5.
Temperature Rules for Safe Cooking
and Handling of Foods

Safe cooking and holding temperatures for foods. Bacteria multiply rapidly between 40°F and 140°F, doubling in number in as little as 20 minutes. To keep food out of this danger zone, keep cold food cold and hot food hot. Keep food cold in the refrigerator, in coolers, or on the service line on ice. Set your refrigerator no higher than 40°F and the freezer at 0°F. Keep hot food in the oven, in heated chafing dishes, or in preheated steam tables, warming trays, and/or slow cookers. Use a clean thermometer that measures the internal temperature of cooked food to make sure meat, poultry, and casseroles are cooked to the temperatures as indicated in the figure.

