



At-Home Safe Food Handling: It's in Your Hands

When it comes to safe food handling and preparation in your home, you're in control. Your home is the final stop in the farm-to-table continuum, and safely handling food is your best protection against foodborne illnesses.

To stop microorganisms, follow these four food safety concepts:

- Clean.** Wash hands and surfaces often.
- Chill.** Refrigerate promptly.
- Separate.** Don't cross-contaminate.
- Cook.** Cook to proper temperatures.

This publication outlines food handling practices from store to table, plus the use of leftovers. The four food safety concepts above are important in several of these steps, so watch for the symbols marking Clean, Chill, Separate, and Cook. Most instances of foodborne illnesses are preventable, so remember, you control at-home food safety. It's in your hands!

Understanding Foodborne Illnesses

Why use food handling precautions at home? Because bacteria that we cannot see, smell, or taste can multiply to millions within a few hours at warm kitchen temperatures. Although most bacteria cause illness when they increase in large numbers, some (such as *E. coli* O157:H7) need only be present in small numbers to cause illness.

Most instances of foodborne illnesses can be prevented by properly handling, storing, and cooking food to control and kill harmful bacteria such as *Salmonella*, *E. coli* O157:H7, and *Listeria*; parasites such as *Toxoplasma* and *Cyclospora*; and viruses such as hepatitis A. Proper handling will also prevent development of toxins produced by *Staphylococcus aureus* and other bacteria.



Shopping

At-home safe food handling begins with grocery shopping. Bacteria grow well in warmer temperatures, so it's important to not allow cold or frozen foods to increase in temperature before you reach home.

- Grocery shop last to avoid leaving food in a hot car.
- Take food straight home after shopping and immediately refrigerate cold items. In hot weather, pack cold foods in ice if the time from the store to home will be more than one hour.
- Place raw meat, poultry, fish, and seafood inside plastic bags found in the meat aisle to avoid contamination from drippings. Keep them separate from other food items in your cart.
- Watch food condition. Don't buy canned goods with large dents, cracks, or bulges. Be sure refrigerated food is cold to the touch and frozen food is rock-solid.
- Avoid buying fresh meat, poultry, fish, or shellfish from informal (not regulated) stands. Ask the vendor what licenses they have and about their food safety practices to learn more.

Quick Tip. Watch for these dates on food:

"Sell by" is the last date a store should sell a product with its best quality.

"Best by" or **"Use by"** is the manufacturer's estimate of how long a product will keep at its best quality.

Dates are quality indicators, not safety dates.

Storing

Refer to Chart #1: Refrigerated Storage Guidelines

- To slow bacterial growth, keep your refrigerator running at 40°F, or even colder, without freezing your milk or lettuce. Keep freezers at 0°F for best food quality. Check the temperature of your refrigerator and freezer with a thermometer.
- Place raw meat, poultry, fish, or shellfish on a plate or in a plastic bag, and on the lowest refrigerator shelf, to avoid contaminating other foods with drippings.



- Cover all foods to protect them from drips and to hold quality.
- Freeze fresh meat or poultry immediately if you won't use it within a few days.
- Thaw meat or poultry in the refrigerator, microwave or under cold running water in your kitchen sink. Then, cook immediately.
- Use acrylic cutting boards instead of wooden boards. Acrylic boards can be washed in the dishwasher. Replace when surface becomes rough.
- Marinate raw meat and vegetable products in the refrigerator. Never reuse marinade; dispose of it down the drain.
- Keep raw meat and its juices away from other foods.
- Do not wash raw meats before cooking. This could splash bacteria to other foods and surfaces.

Preparing

- **Handwashing** is one of the best ways to help prevent foodborne illnesses. Always wash and rub your hands in hot, soapy water for 20 seconds, rinse well, and dry:
 - Before, during, and after preparing any food.
 - Before eating.
 - Before and after caring for someone who is sick or treating a wound.
 - After blowing your nose, coughing, or sneezing.
 - After handling raw meat, fish, seafood, or poultry.
 - After using the toilet.
 - After changing a diaper.
 - After handling pets, pet food, or cat litter.
 - After handling the trash.
- Frequently wash and change kitchen towels, sponges, and cloths.
- Wash cutting boards, dishes, utensils, and countertops with hot, soapy water after preparing different food items, especially raw meats and poultry. Spray surfaces with a simple solution of 1 tablespoon regular chlorine bleach in 1 gallon water. Label spray bottle “sanitizer.”

Quick Tip. Encourage proper handwashing with younger children by having them sing the “Alphabet Song” once. Washing hands for 20 seconds is effective in removing germs from hands.

Quick Tip. To help avoid cross-contamination of food, use two acrylic cutting boards of different colors or shapes. Use one for raw meats and poultry, the other for fruits and vegetables.

Cooking

Refer to Chart #2: Cooking Temperature Guide for Meats and Eggs

- Cook food thoroughly to kill bacteria. Don't chance illness by eating meat, poultry, fish, shellfish (including oysters), or eggs that are raw or only partially cooked.
- Roast meat or poultry in oven temperatures of 325°F or greater.
- Use a meat thermometer to help you determine doneness. Dial or digital thermometers are also available.
- Place the food thermometer in the thickest part of the food toward the end of cooking time. It should not touch bone, fat, or gristle. Clean the thermometer with hot soapy water before and after each use.
- Keep the temperature chart (Chart #2) in your kitchen and refer to it when you cook.

Serving

- **Don't cross-contaminate.** Keep raw and cooked meat, poultry, fish, and seafood separate. Never place cooked food on an unwashed plate that previously held raw meat, poultry, fish, or seafood.
- **Promptly refrigerate.** Never let food sit out of the refrigerator for more than two hours when preparing, serving, and eating. (At summer outings, when temperatures are 90°F and greater, let food sit out no more than 1 hour.)
- Pack lunches and picnic foods with cold packs in insulated carriers, and don't leave out in direct sun.

Quick Tip. Keep hot foods hot (above 140°F) and cold foods cold (below 40°F). The “Danger Zone” — where bacteria grow rapidly — is between this temperature range. Never let perishable food sit out for more than two hours, even if you intend to eat it later.

Leftovers

- **Divide** large amounts of leftover foods, such as soup, into shallow containers for quick cooling. For larger items, such as a whole turkey, cut meat off bones. Cover and place in the refrigerator or freezer.
- **Date** packages of leftovers and, as a rule, use within four days of refrigeration.
- **Reheat** sauces, soups and gravies to boiling; reheat other leftovers until they are piping hot, 165°F throughout.
- **Cover** leftovers with a lid or vented plastic wrap when reheating by microwave. Stir foods several times to avoid cold spots, and let food stand for several minutes after microwaving.
- **Discard** leftovers and other foods that look or smell strange or are old. Never taste them — harmful bacteria often do not change the taste or odor of food. Be careful with moldy foods; most should be discarded.

Quick Tip. As a rule, if the mold isn't a normal component of the food (as with blue cheese), it shouldn't be consumed.

For more information

Your local K-State Research and Extension office
www.ksre.ksu.edu

K-State Rapid Response Center
www.rrc.ksu.edu

K-State Research and Extension Food Safety
www.ksre.ksu.edu/foodsafety

USDA Food Safety and Inspection Service
www.fsis.usda.gov

Meat and Poultry Hotline 1-888-MFHotline
(1-888-674-6854) www.askkaren.gov

USDA ChooseMyPlate
www.choosemyplate.gov

U.S. Food and Drug Administration (FDA) Outreach
and Information Center 1-888-SAFE FOOD
(1-888-723-3366) www.fda.gov

U.S. Government Food Safety Gateway
www.foodsafety.gov

Centers for Disease Control and Prevention
www.cdc.gov/foodsafety

National Fisheries Institute
www.aboutseafood.com

American Egg Board
www.aeb.org

Food Marketing Institute
www.fmi.org

Midwest Dairy Association
www.midwestdairy.com

Chart #1. Refrigerated Storage Guidelines

Use these short, but safe, time limits to keep your refrigerated food (40°F or colder) from spoiling or becoming harmful to eat.

| Product | Storage |
|--|---------------|
| Fresh Meat (Beef, Veal, Lamb, Pork, Bison, and Goat) | |
| Steaks, chops, roasts | 3 to 5 days |
| Variety meats (tongue, kidneys, liver, heart, chitterlings) | 1 to 2 days |
| Raw Hamburger, Ground and Stew Meat | |
| Stew meats | 1 to 2 days |
| Ground beef, turkey, veal, pork, lamb, bison, goat, and mixtures of them | 1 to 2 days |
| Fresh Poultry | |
| Chicken or turkey, whole or parts | 1 to 2 days |
| Giblets | 1 to 2 days |
| Fish and Shellfish | |
| Fresh fish and shell fish | 1 to 2 days |
| Meat, Leftovers | |
| Cooked meat and meat dishes | 3 to 4 days |
| Gravy and meat broth | 1 to 2 days |
| Soup and Stew, Leftovers | |
| Vegetable or meat-added | 3 to 4 days |
| Cooked Poultry, Leftovers | |
| Fried chicken | 3 to 4 days |
| Cooked poultry dishes | 3 to 4 days |
| Pieces, plain | 3 to 4 days |
| Pieces covered with broth, gravy | 1 to 2 days |
| Chicken nuggets, patties | 1 to 2 days |
| Ham, Corned Beef | |
| Corned beef in pouch with pickling juices | 5 to 7 days |
| Ham, canned, labeled "Keep Refrigerated" | |
| unopened | 6 to 9 months |
| opened | 3 to 5 days |
| Ham, fully cooked, whole | 7 days |
| Ham, fully cooked, half | 3 to 5 days |
| Ham, fully cooked, slices | 3 to 4 days |

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| Product | Storage |
|---|----------------|
| Bacon and Sausage | |
| Bacon | 7 days |
| Sausage, raw from meat or poultry | 1 to 2 days |
| Smoked breakfast links, patties | 7 days |
| Summer sausage labeled "Keep Refrigerated" | |
| unopened | 3 months |
| opened | 3 weeks |
| Hot Dogs and Lunch Meats | |
| Hot dogs | |
| opened package | 1 week |
| unopened package | 2 weeks |
| Lunch meats | |
| opened package | 3 to 5 days |
| unopened package | 2 weeks |
| Deli and Vacuum-Packed Products | |
| Store-prepared (or homemade) egg, chicken, tuna, ham, macaroni salads | 3 to 5 days |
| Pre-stuffed pork and lamb chops, chicken breasts stuffed w/dressing | 1 day |
| Store-cooked convenience meals | 3 to 4 days |
| Commercial brand vacuum-packed dinners w/ USDA seal, unopened | 2 weeks |
| Mayonnaise (commercial) | |
| Refrigerate after opening | 2 months |
| Eggs | |
| Fresh, in shell | 3 to 5 weeks |
| Raw yolks, whites | 2 to 4 days |
| Hard cooked, then refrigerated | 1 week |
| Liquid pasteurized eggs or egg substitutes | |
| opened | 3 days |
| unopened | 10 days |
| Cooked egg dishes | 3 to 4 days |
| Dairy Products | |
| Milk | 10+ days |
| Butter | 1 to 2 weeks |
| Cheese | |
| Harder cheeses | several months |
| Softer cheeses, after opening | 1 to 3 weeks |
| Sour cream | 1 month |
| Yogurt | 10 days |

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| Product | Storage |
|--|---|
| Fruits (whole) | |
| <i>Storage time may vary depending on the condition of fresh fruit when purchased.</i> | |
| Apples | 1 month |
| Bananas (only refrigerate ripe bananas) | few days at room temp. |
| Berries | 2 to 3 days |
| Citrus fruit | 2 weeks |
| Grapes | few days |
| Melons | 5 to 7 days |
| Peaches | 2 to 3 days |
| Pears | 5 days |
| Vegetables | |
| <i>Storage time may vary depending on condition of fresh vegetables when purchased. Store in moisture-resistant bags and do not wash until ready to use.</i> | |
| Beans | 1 to 2 days |
| Broccoli | 3 to 5 days |
| Carrots | 2 weeks |
| Cauliflower | 1 week |
| Celery | 1 week |
| Cucumbers, whole | 1 week, unpeeled |
| Green onions (scallions) | 7 to 10 days; use as soon as possible |
| Leafy greens | 3 to 5 days |
| Lettuce | |
| whole | 1 week |
| precut (bagged) | 3 to 5 days, opened 7 to 10 days, unopened or date on bag |
| Mushrooms | 1-2 days |
| Onions | will keep for weeks in a cool, dry, dark place; refrigerate cut onions in a covered container |
| Peppers | 5 to 7 days |
| Potatoes | do not refrigerate; will keep in a cool, dry, dark place for up to 2 months |
| Radishes | up to 2 weeks |
| Squash | |
| Summer | 3 to 5 days |
| Winter | Store in a cool dry place |
| Sweet corn | keep refrigerated; use as soon as possible |
| Tomatoes | for best quality, do not refrigerate whole tomatoes; store at room temperature until ripe, then eat immediately; refrigerate cut tomatoes |

For more information see Safe Food Storage: The Refrigerator and Freezer, MF3130 at <https://www.bookstore.ksre.ksu.edu/pubs/MF3130.pdf>

Chart #2. Cooking Temperature Guide for Meats and Eggs

Note: These are minimum endpoint cooking temperatures for safety. You may choose to cook some cuts to higher temperatures for a greater degree of doneness or because you prefer the flavor. After cooking, allow meat to rest at least three minutes before carving or serving.

| Raw Food | Internal Temperature | Raw Food | Internal Temperature |
|---|----------------------|---|-------------------------|
| Ground Meat and Sausage Products | | Poultry — Chicken, Turkey, Wild Game Birds | |
| Beef, veal, lamb, pork, goat, bison | 160°F | Whole birds and all pieces | 165°F |
| Chicken, turkey | 165°F | | |
| Beef, Veal, Lamb, Goat, Bison | | Fish and Shellfish | |
| Roasts and steaks | 145°F | Fish: flesh is opaque and flakes easily | 145°F |
| | | Shellfish: flesh is opaque and shells open | 145°F |
| Pork | | Eggs | |
| Chops, steaks, roasts, ribs | 145°F | Fried, poached | yolk and white are firm |
| Ham, fresh | 145°F | Casseroles, sauces, custards | 160°F |
| Ham, fully cooked, as purchased | 140°F | | |
| Venison | 160°F | Leftovers, Casseroles, Stuffing | |
| | | | 165°F |

This chart has been adapted for home use and is consistent with consumer guidelines from the U.S. Department of Agriculture and the U.S. Food and Drug Administration.

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Kansas State University Agricultural Experiment Station and Cooperative Extension Service

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MF2465 rev. December 2018