

SAFE FOOD HANDLING AND STORAGE

by U.S. Department of Agriculture's Food  
Safety and Inspection Service

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Today's consumers are purchasing and preparing both traditional and new types of meat and poultry products. People are serving more "keep refrigerated" prepared foods and doing more microwave cooking. To keep pace with new trends, food manufacturers are changing the way they process, package, and distribute their products.

Consumers are concerned, according to recent surveys, about the danger of drug, chemical, and pesticide residues in their food. Yet scientific tests have shown that consumers run little risk of health effects from such residues in meat or poultry.

The most common foodborne illnesses (a more accurate term than "food poisoning") are caused by a combination of bacteria, naturally present in our environment, and food handling errors made in commercial settings, food service institutions, or at home. Ironically, these are also the easiest types of foodborne illnesses to prevent. Proper cooking or processing of raw meat and poultry destroys bacteria that can cause foodborne illness.

The following article discusses how to handle meat and poultry products properly, as well as other foods, to prevent foodborne illness. Whether dealing with a traditional food or a new product, the basic principles of safe food preparation and storage are the same.

KEEPING FOOD SAFE

Most foodborne illness is caused by bacteria that multiply rapidly at temperatures between 60°F and 125°F. To control any bacteria that may be

present, it is important to maintain the internal temperature of cooked foods that will be served hot at 140°F or above, and to maintain the internal temperature of foods that will be served cold at 40°F or below.

High food temperatures (160°F to 212°F) reached in boiling, baking, frying, and roasting kill most bacteria that can cause foodborne illness. Prompt refrigeration at 40°F or below, in containers that are less than two inches deep, inhibits the growth of most, but not all, of these bacteria. Freezing at 0°F or below essentially stops bacterial growth but will not kill bacteria that are already present.

Thorough reheating to an internal temperature of 165°F or above will kill bacteria that may have grown during storage. However, foods that have been improperly stored or otherwise mishandled cannot be made safe by reheating.

To avoid introducing bacteria that can cause foodborne illness, it is important to ensure that everything that touches food during preparation and serving is clean.

The following guidelines highlight the most important food safety rules to keep in mind when shopping for, storing, preparing, and serving food.

#### AT THE GROCERY STORE

- \* Buy food from reputable dealers, with a known record of safe handling.
- \* Buy dated products only if the "sell by" or "use by" date has not expired. While these dates are helpful, they are reliable only if the food has been kept at the proper temperature during storage and handling. Although many products bear "sell by" or "use by" dates, product dating is not a federal requirement.
- \* Buy products labeled "keep refrigerated" only if they are stored in a refrigerated case and are cold to the touch.
- \* Buy frozen products only if they are frozen solid.

- \* Buy packaged, precooked foods only if the package is sound -- not torn or damaged.
- \* Avoid cross-contamination. To prevent raw meat and poultry from contaminating foods that will be eaten without further cooking, enclose individual packages of raw meat or poultry in plastic bags. When shopping, position packages of raw meat and poultry in your shopping cart so their juices cannot drip on other foods.
- \* Shop for perishables last. Keep refrigerated and frozen items together so they will remain cold. Place perishables in the coolest part of your car during the trip home. Pack them in an ice chest if time from store to home refrigerator will be more than one hour.

#### STORING PERISHABLE FOODS

- \* Raw meat and poultry should be wrapped securely so they do not leak and contaminate other foods or surfaces. Use plastic bags over commercial packaging or place the product on a plate to contain raw juices.
- \* Since repeated handling can introduce bacteria to meat and poultry, it's best to leave a product in the store wrap unless it's torn.
- \* Date any undated products you may have purchased and be sure to use them within the recommended time (see chart, below).
- \* Refrigerate all products marked "keep refrigerated".
- \* Eggs should be stored in their carton in the refrigerator.
- \* Freeze all food with "keep frozen" labels.

- \* Use a refrigerator thermometer to verify refrigerator temperature at 40°F or below and freezer temperature at 0°F or below.
- \* Maintain a clean refrigerator and freezer.
- \* Make sure the arrangement of items in your refrigerator and freezer allows the cold air to circulate freely.
- \* To minimize dehydration and quality loss, use freezer wrap, freezer-quality plastic bags, or aluminum foil over commercial wrap on meat and poultry that will be stored in the freezer for more than a couple of months.

#### PREPARATION

- \* Be sure that the food preparation area and all surfaces and utensils that will touch food are clean.
- \* Always wash hands with soap and warm water for at least 20 seconds before beginning food preparation.
- \* Use rubber or plastic gloves to handle food if there is any kind of skin cut or infection on your hands. Gloved hands should be washed just as often as bare hands when working with foods.
- \* Do not sneeze or cough into food.
- \* Wash fresh fruits and vegetables with plain water to remove surface pesticide residues and other impurities, such as soil particles. Thick-skinned produce may be scrubbed with a brush if desired.
- \* Do not let juices from raw meat or poultry come in contact with other

foods. Wash the cutting board, utensils, counter, sink, and hands with hot soapy water immediately after preparing raw meat or poultry. Also use a fingernail brush to clean under nails and cuticles. Keep dishwashing sponges and clothes clean.

\* Use cutting boards that are easy to clean -- plastic or rubber composition are good choices. Wooden boards may be attractive looking, but they should only be used for cutting breads because they are porous and are therefore difficult to clean thoroughly.

\* Do not taste any food of animal origin -- meat, poultry, eggs, fish, or shellfish -- when it's raw or during cooking.

\* Do not thaw meat or poultry on the counter. Bacteria can multiply rapidly at room temperature.

\* The safest way to thaw meat or poultry is to defrost it in the refrigerator. Place the package in the refrigerator immediately after removing it from the freezer.

\* Foods that have been thawed in the refrigerator can be safely refrozen.

\* For faster thawing, put the package in a water-tight plastic bag submerged in cold water. Change the water every 30 minutes. The cold water temperature slows bacterial growth that may occur on the outer thawed portions while the inner areas are still thawing.

\* The microwave oven can be used for quick, safe defrosting. Follow the manufacturer's directions. Foods defrosted in the microwave should be cooked immediately after thawing.

## COOKING

General Rules: Cook meat and poultry to the "doneness" temperature given in the chart (below):

- \* To make sure meat or poultry more than two inches thick is cooked all the way through, use a meat thermometer. Insert the tip into the thickest part of the meat, avoiding fat, bone, or gristle. For poultry, insert the tip into the thick part of the thigh next to the body.

- \* For meat and poultry less than two inches thick, look for clear juices and lack of pink in the center as signs of "doneness".

- \* Cooking temperatures in conventional ovens should be at least 325°F. Do not use recipes that call for cooking without a reliable and continuous heat source.

- \* Avoid interrupted cooking. Completely cook meat and poultry at one time. Partial or interrupted cooking often produces conditions that encourage bacterial growth.

- \* When cooking frozen meat or poultry that has not been defrosted, cook it about 1 1/2 times the length of time required for the same cut when thawed.

Microwave Cooking: Microwave ovens heat food surfaces rapidly. However, time must be allowed for the heat to penetrate to the center of the food. It is important to be familiar with the information in the owner's manual and take the following steps to ensure that food cooks thoroughly and evenly in the microwave oven:

- \* Debone large pieces of meat. Bone can shield the area around it from thorough cooking.

- \* Cover the food to hold in moisture and facilitate even cooking.
  
- \* Use the middle-range temperature (or 50% power) for large cuts of meat or poultry. This allows heat to be conducted throughout the food without over-cooking.
  
- \* If the microwave oven doesn't have a turntable, turn the entire dish several times during cooking. Always stir soups, stews, stuffings, and gravies several times during cooking.
  
- \* Use a temperature probe or meat thermometer to verify that food has reached a safe internal temperature. Check the temperature in several places, avoiding fat and bone.
  
- \* When following microwave oven cooking instructions on product labels, remember that ovens vary in power and operating efficiency. Check the cooked product with a meat thermometer to ensure that it has reached a safe internal temperature.
  
- \* Allow food cooked in the microwave oven to stand for the recommended time before serving. This is necessary to complete the cooking process.
  
- \* Glass cookware, glass ceramic cookware, and waxed paper are safe for microwave cooking. Plastic wrap may be used to cover containers but should not touch food. Before using other types of containers, wraps, or paper products, check to be sure that they are approved for use in the microwave oven. Unapproved materials may melt, burn, or contain chemicals that can migrate into food during cooking.
  
- \* Do not use the microwave oven for home canning. As the liquid in a sealed glass jar heats and expands, pressure can build up, causing the jar to explode.

Slow Cookers: Slow cookers generally take more than two hours to heat food to bacteria-killing temperatures. To ensure uniform and thorough cooking:

- \* Use small pieces of refrigerated (not frozen) meat or poultry.
- \* Use a recipe that includes a liquid.
- \* Do not fill the cooker more than 2/3 full.
- \* Always place the lid on the slow cooker.
- \* Check the internal temperature to be sure that the food is thoroughly cooked to at least 160°F.

#### HANDLING LEFTOVERS

- \* Wash hands before handling leftovers and use clean utensils and surfaces.
- \* Refrigerate or freeze leftovers in covered, shallow (less than two inches deep) containers within two hours after cooking. Debone large pieces of meat or poultry and divide them into smaller portions to refrigerate or freeze within two hours after cooking. Leave air-space around containers or packages to allow circulation of cold air and help ensure rapid, even cooling.
- \* When preparing food for later use, refrigerate or freeze it immediately after cooking, in covered shallow containers, so there's no chance of leaving it out for more than two hours. Refrigerators and freezers are designed to compensate for the addition of a few temporarily hot foods without allowing other foods to warm up.

- \* Date leftovers so they can be used within a safe time as shown in the cold storage chart (see below). Avoid tasting old leftovers.
- \* Remove stuffing from meat or poultry before refrigerating or freezing.
- \* Before serving, cover and reheat leftovers to 165°F. Soups, sauces, gravies, and other "wet" foods should be reheated to a rolling boil.

If in doubt, throw it out. Discard outdated, obviously spoiled, or possibly unsafe leftovers in garbage disposal or in a tightly wrapped package that cannot be consumed by people or animals.

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SIDE BAR  
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#### PICNIC SAFETY

When goin on a picnic or traveling with food, keep all perishables in a cooler with ice or freeze-pack inserts until serving time.

- \* Make sure that food is cold or frozen to the touch before placing it in the cooler or cold thermos.
- \* If soap and water will not be available, take along disposable, wet handi-wipes to clean hands before and after working with food.
- \* When packing a "bag lunch" that will be eaten within several hours, a small freeze-pack insert in an insulated bag is probably all that is necessary to keep the food cold.

\* Be sure to put the cooler or lunch bag in the coolest place possible; don't leave it in direct sun or in a warm car.

\* A thermos designed for hot foods can be used to keep soup at a safe high temperature for several hours. Just before pouring the soup into the thermos, rinse the thermos with boiling water. Bring the soup to as high a temperature as possible before pouring it in. The soup should be hot to the touch at serving time.

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#### COOKING TEMPERATURE CHART

Cooking food to an internal temperature of 160°F usually protects against foodborne illness. However, some foods are considered more tasty when they are cooked to a higher internal temperature. The higher temperature in this chart reflect a greater degree of "doneness".

#### EGGS & EGG DISHES

Eggs	Cook until yolk & whites are firm
Egg dishes	160°F

#### GROUND MEAT & MEAT MIXTURES

Turkey, chicken	170°F
Veal, beef, lamb, pork	160

#### FRESH BEEF

Rare (some bacterial risk)	140
Medium	160
Well done	170

#### FRESH VEAL

Medium	160
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Well done		170
FRESH LAMB		
Medium		160
Well done	170	
FRESH PORK		
Medium		160
Well done	170	
POULTRY		
Chicken		180
Turkey	180	
Turkey breasts or roasts		170
Thighs & wings		Cook until juices run clear
Stuffing (cooked alone or in bird)		165
Duck & Goose	180	
HAM		
Fresh (raw)	160	
Pre-cooked (to reheat)	140	
Shoulder		160

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COLD STORAGE CHART

These short but safe time limits will help keep refrigerated food from spoiling or becoming dangerous to eat. The time limits given for frozen foods are to maintain flavor and texture. It is still safe to eat frozen foods that have been kept longer.

PRODUCT	REFRIGERATOR (40°F)	FREEZER (0°F)
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EGGS

Fresh, in shell	3 weeks	Don't freeze
Raw yolks, whites	2-4 days	1 year
Hardcooked	1 week	Don't freeze
Liquid pasteurized eggs or egg substitutes:		
opened	3 days	Don't freeze
unopened	10 days	1 year

MAYONNAISE, Commercial

Refrigerate after opening	2 months	Don't freeze
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TV DINNERS, FROZEN CASSEROLES

Keep frozen until ready to serve		3-4 months
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DELI & VACUUM-PACKED PRODUCTS

Store-prepared (or homemade)

egg, chicken, tuna, ham, macaroni salads	3-5 days	Don't freeze
Pre-stuffed pork, lamb chops, or chicken breasts	1 day	If you are going to freeze these
Store-cooked convenience meals	1-2 days	foods, do so as
Commercial brand vacuum-packed dinners with USDA seal	2 weeks, unopened	soon as you get them home.

SOUPS & STEWS

Vegetable or meat-added	3-4 days	2-3 months
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HAMBURGER, GROUND & STEW MEATS

Hamburger & stew meats	1-2 days	3-4 months
Ground turkey, veal, pork, or lamb	1-2 days	3-4 months

HOTDOGS & LUNCH MEATS

Hotdogs, opened	1 week	1-2 months
unopened	2 weeks	" "

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Lunch meats, opened	3-5 days	"	"	"
unopened	2 weeks		"	"
<b>BACON &amp; SAUSAGE</b>				
Bacon	7 days		1 month	
Sausage, raw (pork, beef, or turkey)	1-2 days			1-2 months
Smoked breakfast links, or patties	7 days	"	"	
Hard sausage - pepperoni	2-3 weeks	"	"	
<b>CORNED BEEF</b>				
Corned beef in pouch	5-7 days		1 month	
<b>HAM</b>				
Ham, canned				
Label says "keep refrigerated"	6-9 months		Don't freeze	
Fully cooked - whole	7 days		1-2 months	
Fully cooked - half	3-5 days	"	"	"
Fully cooked - sliced	3-4 days		"	"
<b>FRESH MEAT</b>				
<b>Beef</b>				
steaks	3-5 days			6-12 months
roasts	3-5 days			6-12 months
<b>Lamb</b>				
chops	3-5 days		6-9 months	
roasts	3-5 days		6-9 months	
<b>Pork</b>				
chops	3-5 days		4-6 months	
roasts	3-5 days		4-6 months	
<b>Veal</b>				
roasts	3-5 days		4-8 months	
<b>Variety Meats</b>				
tongue, brain, kidneys, liver etc..	1-2 days			3-4 months

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MEAT LEFTOVERS

Cooked meat and meat dishes	3-4 days	2-3 months
Gravy and meat broth	1-2 days	2-3 months

FRESH POULTRY

Chicken or turkey, whole	1-2 days	1 year
pieces	1-2 days	9 months
giblets	1-2 days	3-4 months

COOKED POULTRY, LEFTOVERS

Fried chicken	3-4 days	4 months
Cooked poultry dishes	3-4 days	4-6 months
Pieces, plain	3-4 days	4-6 months
covered in gravy or broth	1-2 days	6 months
Cooked nuggets or patties	1-2 days	1-3 months

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