

Food Safety Guidelines

Foodborne illness is any illness caused by eating a food that is contaminated with a bacteria, virus, mold, or parasites. Examples of organisms that can cause a food borne illness are *E. coli*, *Salmonella* and *Listeria*. Sources of foodborne illness may be the food handler, the environment (such as a contaminated work surface) or the food itself.

Bacteria and other organisms exist commonly in foods. Most of these organisms are of little risk to the average healthy person. However, persons undergoing chemotherapy, radiation, or a hematopoietic cell transplant are at increased risk for infections, including foodborne illness. By following safe food practices, patients and caregivers can reduce the risk of foodborne illness.

All hematopoietic cell transplant patients are recommended to follow the “*Immunosuppressed Patient Diet*.” In addition, it is recommended that all patients follow the food safety guidelines discussed below. If you have any questions regarding food safety and diet guidelines, talk to your dietitian.

Steps to food safety

- Wash hands and surfaces often
- Avoid cross-contamination of foods
- Keep foods at a safe temperature

Tools for food safety

- Food and refrigerator thermometers
- Hand soap
- Clean towels (cloth or paper)
- Bleach solution* (for washing countertops, cutting boards and other items)



***Dilute bleach solution:** Mix 4 teaspoons with 1 quart (4 cups) water. This solution must be remade daily.

Hand hygiene

- Wash hands frequently with soap and warm, running water and rubbing motion (friction) for 20 seconds before and after every step in food preparation. This is critical before and after handling raw meat, seafood and poultry.
- Wash hands before eating and after using the rest room, handling garbage, and touching pets.
- Dry hands with a paper towel or cloth hand towel that is changed daily.

Kitchen cleanliness

General

- Replace dishcloths and dishtowels daily. They should be laundered in the hot cycle of your washing machine.
- Sanitize sponges daily and after contact with raw meat, fish and eggs. You may soak them in the dilute bleach solution* for five minutes, heat them in a microwave oven on high for one minute, or run them through the dishwasher.
- Use liquid dish soap and very warm water when hand-washing dishes, pans, and utensils. Air-dry dishes instead of towel-drying them.
- Wash counters, utensils, and can openers with soap and hot water immediately after use. After washing, they can be sanitized using the dilute bleach solution*.
- Keep the refrigerator clean. Clean spills immediately. Wash shelves and doors weekly using the dilute bleach solution*.
- Make sure food storage areas remain clean.
- Rotate food stock so older items are used first. Check expiration dates. Do not use foods past the expiration dates.
- Throw away any bulging, leaking or cracked cans, or those deeply dented in the seam area. Do *not* taste these foods.
- Keep appliances free of food particles (including the microwave oven, toaster, can opener, blender and mixer blades). Blender blades and the bottom ring should be removed from the blender after each use and washed in hot, soapy water.
- Keep food storage areas clean. Do not store any food supplies under the sink. Do not store chemicals and cleaning solutions over or near food supplies.

Cutting boards

- Wash cutting boards with hot, soapy water after each use; then rinse and air-dry or pat dry with fresh paper towels. Non-porous acrylic, plastic or glass boards and solid wood boards can be washed in a dishwasher (laminated boards may crack or split).
- Sanitize both wooden and plastic cutting boards with the dilute bleach solution*. This should be done every time the board is used for raw meat, fish and poultry. Sanitize cutting boards used for other purposes at least once weekly. Flood the surface with the bleach solution and allow it to stand for at least 2 minutes, then rinse and air-dry or pat dry with fresh paper towels.
- Replace worn cutting boards, including boards with cracks or grooves.

Safe food handling: from the grocery store to your home

Grocery Store

- Shop for shelf-stable items first (shelf-stable refers to unopened canned, bottled, or packaged food products that can be stored at room temperature before opening; the container may require refrigeration after opening.)
- Select frozen and refrigerated foods last, especially during the summer months.
- Check “sell by” and “use by” dates on dairy products, eggs, cereals, canned foods, and other goods. Select only the freshest products.
- Check packaging dates and “**use by**” dates on fresh meats, poultry, and seafood. Do not purchase if they are outdated.
- Do not use damaged, swollen, rusted, or deeply dented cans. Check that packaged and boxed foods are properly sealed.
- Select fruits and vegetables that are not moldy, bruised, or damaged. Fresh fruits and vegetables should look fresh. Wilted salad greens may be an indication that the product is old and not properly handled.
- Avoid unpasteurized juice (unless prepared at home with washed produce).
- Choose shelf-stable salsa rather than salsas found in the refrigerator section of the grocery store.
- Avoid unpasteurized milk, yogurt, cheese, other unpasteurized milk products, including Mexican-style cheese made from unpasteurized milk (such as queso fresco).
- Do not use foods with any mold present, including blue cheese.
- Avoid unrefrigerated, cream- and custard-filled pastry products, such as fresh bakery cream pies, eclairs, cream-filled donuts and pastries. Commercial, shelf-stable items such as Danish pastries are allowed. Follow the “use by” date and store them according to the manufacturer’s guidelines after opening.

Safe food handling, continued

- Avoid foods from “reach in” or “scoop” bulk food containers. Avoid food from any type of bulk food container if it will not be cooked prior to consumption.
- Do not taste unpackaged food samples.
- Choose eggs that are refrigerated in the store. Do not use cracked eggs. Pasteurized eggs, liquid pasteurized egg products (such as Egg Beaters®) and powdered egg whites may be used in recipes calling for raw eggs in foods that will not be cooked.
- Place meat, poultry, and fish in plastic bags. Ask to have these items placed in separate bags from the fresh produce and ready-to-eat foods when at the checkout stand.
- Never leave perishable food in the car. Refrigerate or freeze them promptly.

Home

- Wash the tops of canned foods before opening. Clean the can opener after each use.
- Throw away eggs with cracked shells.
- Throw away foods older than their “use by” expiration dates.
- Throw away entire food packages or containers with *any* mold present, including yogurt, cheese, cottage cheese, fruits (especially berries), vegetables, jelly, bread, cereal, and pastry products.

Fruit and vegetable handling

All fresh produce (whether organic, natural, or general produce) may carry dangerous bacteria or other organisms that can cause food borne illness. Bacterial contamination can occur in the fields from the use of natural fertilizers (such as animal manure) or from human contact during produce harvesting, transporting and in the grocery store. **The term “organic” or “natural” refers to growing without the use of chemical fertilizers or pesticides and has no relationship to the cleanliness or safety of the produce.**

Use the following guidelines for handling all raw produce, including organic, organically grown, “natural”, and general produce:

- Refrigerate fruits and vegetables promptly.
- Do not purchase produce that has been cut at the grocery store (such as melon or cabbage halves). This is particularly true for produce that will not be cooked prior to eating.
- Rinse produce thoroughly under **clean, running water** just before use, including produce that is to be peeled (such as bananas, melons, and oranges) or cooked. Do not wash fruits and vegetables with soaps, detergents, or chlorine bleach solutions. Produce can absorb these cleaning agents.

Fruit and vegetable handling, continued

- Commercial produce rinses (such as Fit® Fruit and Vegetable Spray) are not recommended since they have not been shown to be more effective for removing bacteria off the produce than washing under running water.
- Scrub produce that has a thick, rough skin or rind (such as cantaloupe or potatoes) or has visible dirt on the surface using a clean vegetable scrubber.
- Rinse leaves of leafy vegetables (such as lettuce, spinach, cabbage) individually under running water.
- Packaged salads, slaw mixes, and other prepared produce, even when marked pre-washed, should be rinsed again under running water; a salad spinner or colander can be used to make this easier. Check for “**use by**” dates.
- Do not eat any raw vegetable sprouts (avoid **all** types, including alfalfa sprouts, clover sprouts, mung bean sprouts, etc) due to high risk of Salmonella and *E. coli* contamination
- Throw away fruits and vegetables that are slimy or show mold.
- Review the processing procedure if preparing home-canned foods. Be sure the procedure is appropriate for the acidity of the food, size of the bottle, and elevation above sea level. Look for mold and leaks. Check seals. *If you suspect a home-canned food may not have been properly processed (for example, if the lid bulges or if the food has any bad odor or unusual characteristics after opening), **throw it away**. It is recommended to use home canned foods within one year of canning as chemical changes may occur.*

Avoid cross contamination

- Use a clean knife for cutting different foods (for example, use different knives for cutting meat, produce, or bread).
- During food preparation, do not taste the food with the same utensil used for stirring. Use a clean utensil each time you taste food while preparing or cooking.
- In the refrigerator, store raw meat separately from ready-to-eat foods.
- When grilling, always use a clean plate and utensils for the cooked meat.

Keep foods at safe temperatures

Proper thermometer use

- Test thermometer accuracy by placing into boiling water; it should read 212°F.
- Read the manufacturer's instructions. Insert the meat thermometer into the middle of the thickest part of the food to test for doneness. The entire part of the stem, from the dimple to the tip, must be inserted into the food. For thin foods, insert the thermometer sideways.
- A refrigerator thermometer should be placed on a shelf toward the back of the refrigerator. It should read 40°F or less.

Refrigeration

- Keep the refrigerator temperature at or below 40°F.
- Keep the freezer temperature at or below 0°F.
- Never leave perishable food out of the refrigerator for over **two hours**. Throw away food left out longer than two hours.
- Marinate foods in the refrigerator.
- Thaw foods in the refrigerator, never on the counter.
- Thaw meat, fish or poultry in the refrigerator away from raw fruits and vegetables and other prepared foods. Place on a dish to catch drips. Cook defrosted meat right away; do not refreeze. If you are in a hurry, you can thaw meat in the microwave. **The meat must be cooked immediately after thawing.**
- Cool hot foods uncovered in shallow containers in the refrigerator. Cover storage containers after cooling. Make sure that covers seal tightly.
- Throw away all prepared food after 72 hours (3 days). Use labels or masking tape to write dates on containers.
- Freeze foods that will not be used within 2 to 3 days.
- **Never taste food that looks or smells strange.**

Cook foods to the recommended temperature

- Cook meat until it is no longer pink, and the juices run clear. These are signs that the meat may be cooked to a high enough temperature. However, the only way to be sure that the meat has been cooked to the proper temperature is to use a food thermometer (See Table 1 on the next page).
- Thoroughly heat until steaming (165°F) all hot dogs and "ready to eat" luncheon meats, cold cuts and "deli-style" meats before eating.
- Do not eat raw, lightly cooked, or soft-boiled eggs.
- Do not eat uncooked foods containing raw or undercooked eggs, such as raw cookie dough, cake batter, or salad dressings containing raw or coddled eggs.

Keep foods at safe temperatures, continued

- Pasteurized eggs and liquid pasteurized egg products (such as Egg Beaters®) may be used in recipes calling for raw eggs in foods that will not be cooked.
- Keep food at safe temperatures: hot food above 140°F, cold food below 40°F.

Recommended minimum cooking temperatures

Product	Cooking temperature or visual characteristics
Eggs, Egg Dishes and Casseroles	
Eggs	Cook until yolk and white are firm
Casseroles, foods containing eggs, custards and egg sauces	160°F
Veal, beef, pork, lamb, rabbit, goat, game	
Whole pieces meat	145°F
Ground veal, beef, lamb, pork, rabbit, goat, game	160°F
Poultry (chicken, turkey, duck, goose)	
Chicken and turkey: whole bird and dark meat (leg, thigh, wing)	165°F
Breast, roast	165°F
Ground chicken, turkey	165°F
Stuffing (always cook in separate container outside of bird)	165°F
Ham	
Fresh (raw)	145°F
Pre-cooked (to reheat)	140°F
Seafood	
Fin fish (such as salmon, cod, halibut, snapper, sole, bass, trout)	145°F or cook until opaque and separates easily with a fork.
Shrimp, lobster, crayfish, crab	Cook until flesh is pearly and opaque.
Scallops	Cook until flesh is milky white or opaque and firm.
Clams, mussels, oysters	Cook until shells open during cooking (<i>may be high risk food for people with low white count or immunosuppressed</i>).
Leftovers, hot dogs, and luncheon meats	
Leftovers	165°F
Hot dogs, luncheon meat	Steaming hot

Microwave cooking

- Microwave cooking can leave cold spots in food where bacteria can survive. Rotate the dish a quarter turn once or twice during cooking if there is no turntable in the appliance.
- When heating leftovers, use a lid or vented plastic wrap to cover them. Stir several times during reheating. When the food is heated thoroughly (to a minimum of 165°F), cover and let sit for 2 minutes before serving.

Additional guidelines for general oncology patients with low white blood count* and *all* hematopoietic cell transplant patients

**Low white blood cell count refers to a neutrophil count less than 1000mm³ or when chemotherapy is held due to low neutrophil count.*

Dining out safely

- Eat early to avoid crowds
- Ask that food be prepared fresh in fast food establishments (for example, a hamburger should be fresh off the grill, not one that has been sitting under heat lamps).
- Ask if fruit juices are pasteurized.
- **Avoid raw fruits and vegetables when dining out.** Eat these items when prepared at home, where you can wash them thoroughly and prepare them safely.
- Ask for single-serving condiment packages. Do not use public self-serve condiment containers, including salsa.
- Avoid salad bars, delicatessens, buffets and smorgasbords, potlucks and sidewalk vendors.
- Be sure that utensils are set on a napkin or clean tablecloth or placemat, rather than directly on the table.
- Check the general condition of the restaurant. Are the plates, glasses, and utensils clean? Are the restrooms clean and stocked with soap and paper towels? How clean the restaurant looks may tell the amount of care taken while preparing the food.
- If you want to keep your leftovers, ask the server to bring you a box into which you can transfer the food yourself, rather than having your food transferred into a box in the restaurant kitchen. Be sure to take home and refrigerate the leftovers immediately.

Other foods

- Soft cheeses such as feta, Brie, Camembert, blue-veined, Stilton or Mexican-style cheese (queso fresco) must be heated before eating.
- Cut tofu into 1-inch cubes or smaller and boil 5 minutes in water or broth before eating or using in recipes. (Note: This process is not needed if using pasteurized tofu or aseptically packaged shelf-stable tofu such as Mori-Nu® silken tofu.)
- Choose shelf-stable salsas and salad dressing (shelf-stable refers to unopened canned, bottled, or packaged food products that can be stored at room temperature before opening; the container may require refrigeration after opening.) Avoid fresh fruit or vegetable salsas and salad dressing found in the refrigerated section of the grocery store.
- Do not consume raw honey or honeycomb. Choose **Grade A** honey.

Water safety guidelines

Public water quality and treatment varies throughout the United States, so always check with the local health department and water utility regarding the safety of household and community tap water and ice for use by immunosuppressed persons.

Tap water

Water from your home faucet is considered safe if your water is from a city water supply or a municipal well serving highly populated areas.

Well water

Well water from private or small community wells is not considered safe for consumption by persons considered immunosuppressed and at risk for infection. Water from a private or community well must be heated to a rolling boil for 15-20 minutes. This water should be stored in the refrigerator and may be used up to 48 hours (2 days).

Examples of ways well water could become contaminated:

- Construction occurs near the well
- Well depth is shallow
- Well is located near a dairy or large number of livestock
- flooding has recently occurred in the well area

Municipal wells

Drinking well water from municipal wells serving highly populated areas is considered safe because the water is tested for bacterial contamination more than two times each day.

Water safety guidelines, continued

Private and small community wells

The quality of well water from these sources cannot be guaranteed.

Not considered safe

Common home water filtration devices *do not* remove bacteria or viruses. If the well water supply is chlorinated per guidelines provided by your local health department, the chlorinated water treated with one or more of the following is considered safe to consume:

- Reverse osmosis treated
- Distillation
- Filtered through an absolute 1 micron or smaller filter (NSF Standard #53 for cyst removal). See “Water filters” (below).

Safe water sources

The following sources of water are suggested if your water is not from a city water or municipal well supply:

- Bottled Water: Acceptable forms of bottled water have been processed to remove organisms known to cause stomach or intestinal infection. Bottled water labels reading “well water,” “artesian well water,” “spring water,” or “mineral water” *do not guarantee* that the water is safe to drink. Water labeled as having been treated with one or more of the following are considered safe:
 - Reverse osmosis treated
 - Distillation
 - Filtered through an absolute 1 micron or smaller filter (NSF Standard #53 for cyst removal)

Bottled water

To be sure that a specific brand of bottled water has undergone one of the above processes, contact the International Bottled Water Association (IBWA) at 1-800-928-3711, or visit their home page at bottledwater.org. If the IBWA does not have information on a specific brand, call the bottling company directly.

IBWA follow more strict manufacturing practices in their water bottling process than those practices currently mandated by the United States Food and Drug Administration. Therefore, water bottled by a member of the IBWA may be preferable to water produced by non-member bottlers.

Water filters

Most water filtration devices will not make the water safe if the water supply has not been previously chlorinated. If you choose to install water filters on household water taps purchase only filters certified by NSF International. The following specifications must also be met:

- a. The filters must be designed to remove coliforms and *Cryptosporidium*. Any of the following are acceptable:
 - Reverse osmosis filter
 - Absolute pore size of filter 1 micron or smaller
 - Tested and certified by NSF Standard #53 for cyst removal
- b. The water tap filter must be installed immediately before the water tap.
- c. Manufacturer directions must be followed for filter maintenance and replacement.

Portable water filters (such as a Brita® or Pur® system) as well as refrigerator-dispensed water and ice machine systems do not meet filtration standards. Portable water systems filter out chemical impurities, not bacteria. If a portable water system (such as a Brita® pitcher) is used in combination with a safe water supply (to improve water flavor and remove chlorine and other impurities), it is recommended to change the system's filters frequently according to manufacturer's guidelines.

For a list of approved filtration systems, call the *National Sanitation Foundation International*, at 1-800-673-8010 or visit their home page at NSF.org (go to the section entitled "Home Water Treatment Devices")

This education resource was intended to be given as a part of a nutrition consult by a Fred Hutchinson Cancer Center dietitian. Questions? Ask a Fred Hutch dietitian at nutrition@seattlecca.org.