

# Food Safety

## For patients with weakened immune systems

When you have cancer, your immune system which usually protects you from infection may be weakened. There is a greater chance that a serious illness may develop from eating food that may have bacteria or germs (contaminated food). Patients receiving chemotherapy, radiation, or marrow or stem cell transplant are at higher risk for food borne illness (also called food poisoning).

This guide has some useful tips and instructions that you can follow every day to lower your chances of getting food poisoning, such as:

- How to make safer food choices
- How to shop for and store food
- How to prepare and cook your food

This document is a general overview. For more specific information about your care, please ask a member of your health care team for a referral to a registered dietitian.



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## Food Borne Illness

### What is food borne illness?

Food borne illness, also called food poisoning, is when a person gets sick from eating food that has been contaminated. Food is contaminated when it has a bacteria, parasite or virus.

Symptoms of food borne illness could include some or all of the following:

- stomach cramps
- nausea
- vomiting
- diarrhea
- fever

## Common types of food borne illness

The table below contains common types of and sources of food borne illness.

Bacteria Infection	Types of food where bacteria may be found
<b>Listeria</b>	Refrigerated, ready-to-eat foods, such as dairy products, deli meat and hot dogs.
<b>E. coli O157:H7</b>	Raw and under-cooked ground beef, unpasteurized fruit juice or cider, sprouts, and unpasteurized dairy products.  Note: Pasteurization is the process of heating milk products or juices to a high temperature to kill the germs that make you sick.
<b>Vibrio</b>	Raw and under-cooked shellfish, such as oysters, clams, and mussels.
<b>Salmonella</b>	Raw and under-cooked chicken, raw eggs and raw milk.

## Lowering your Risk

### The 4 Basic Safety Tips

Bacteria or germs can be found in food when it is not properly stored, cooked or handled. You cannot always tell if food is spoiled by its look, smell or taste. If you are not sure about its safety it is best to throw it out.

There are 4 basic safety steps you should always follow when handling, storing, preparing, and shopping for food:

## Clean

Wash your hands, kitchen surfaces, utensils, and reusable shopping bags often with warm, soapy water to remove bacteria and reduce your risk of food borne illness.



## Separate

Separate your raw foods, such as meat and eggs, from cooked foods, fruits, and vegetables to avoid cross-contamination. Cross contamination happens when germs or bacteria from raw foods are transferred to ready-to-eat foods. Ready-to-eat foods, if not cooked any further, become contaminated and this can lead to food poisoning.



## Cook

Always cook food to safe internal temperatures as shown on the chart on page 12. This means the thickest part of the food must reach a certain temperature before it can be safe to eat. This can be checked using a digital food thermometer that you can buy from many grocery stores.



## Chill

Always refrigerate food and leftovers right away at 4 °C or below. Check your fridge thermometer to make sure it is at or below 4 °C.



## Safer Food Choices

Type of Food	Safer Food Choices	Foods to Avoid
Eggs and Egg Products	<ul style="list-style-type: none"> <li>• Egg dishes cooked until middle reaches a safe temperature of 74 °C (164 °F)</li> <li>• Cook eggs until the yolk is firm. Do not eat if runny</li> <li>• Store bought eggnog that is pasteurized (look for the word 'pasteurized' on the package label)</li> <li>• Homemade eggnog must be heated to 71 °C (160 °C)</li> <li>• Pasteurized egg products such as Egg Beaters can be substituted in recipes that need raw eggs</li> </ul>	Raw or lightly cooked eggs or egg products, such as salad dressings, cookie dough or cake batter sauces, and drinks such as homemade eggnog
Meat and Poultry	<ul style="list-style-type: none"> <li>• Meat and poultry cooked until the thickest part reaches a safe temperature (see Internal Cooking Temperatures Chart)</li> <li>• Canned meats such as ham</li> </ul>	<ul style="list-style-type: none"> <li>• Raw or undercooked meat or poultry, such as steak tartare</li> <li>• Rare and medium rare meat</li> <li>• Meat displayed at a deli counter</li> </ul>
Vegetarian and Vegan Protein	<ul style="list-style-type: none"> <li>• Aseptically packaged and cooked tofu such as Sunrise Soya Tofu</li> <li>• Cooked soya protein (for example, Yves products)</li> </ul>	<ul style="list-style-type: none"> <li>• Raw or undercooked tofu</li> <li>• Tempeh</li> <li>• Miso</li> </ul>

Type of Food	Safer Food Choices	Foods to Avoid
Hot Dogs and Deli Meats	<ul style="list-style-type: none"> <li>• Hot dogs cooked until the middle is steaming and is 74 °C (165 °F)</li> <li>• Dried and salted deli meats such as salami, pastrami and pepperoni</li> <li>• Non-dried deli meats heated completely to steaming hot</li> <li>• Packaged meats</li> </ul>	<ul style="list-style-type: none"> <li>• Hot dogs straight from the package without heating</li> <li>• Non-dried deli meats, such as bologna, roast beef and turkey breast</li> <li>• Deli meats from the deli counter</li> <li>• Smoked meats</li> </ul>
Pâtés and Meat Spreads	<ul style="list-style-type: none"> <li>• Pâtés and meat spreads sold in cans</li> <li>• Pâtés and meat spreads that do not need to be refrigerated until after opening</li> </ul>	<ul style="list-style-type: none"> <li>• Refrigerated pâtés and meat spreads</li> </ul>
Dairy Products	<ul style="list-style-type: none"> <li>• Pasteurized dairy products.</li> <li>• Commercially packaged hard cheeses such as Colby, Cheddar, Swiss and Parmesan</li> <li>• Soft and semi soft cheeses made from pasteurized milk such as Mozzarella, cottage cheese, cream cheese and ricotta cheese</li> <li>• Cooked soft cheeses such as brie or camembert (refrigerate once opened)</li> <li>• Dry, refrigerated, or frozen pasteurized whipped topping</li> </ul>	<p>Raw or unpasteurized dairy products, such as soft and semi-soft cheese (like Brie, Camembert and blue-veined cheese)</p>

Type of Food	Safer Food Choices	Foods to Avoid
Seafood	<ul style="list-style-type: none"> <li>• Seafood cooked until the thickest part is 74 °C (165 °F).</li> <li>• Cook shelled seafood until the shell has opened such as shrimp</li> <li>• Smoked seafood in cans that do not need to be put in the fridge until after opening.</li> <li>• Canned fish such as canned tuna or salmon</li> </ul>	<ul style="list-style-type: none"> <li>• Raw or undercooked fish, shellfish, and seafood, such as sushi, sashimi and ceviche</li> <li>• Raw oysters, clams and mussels</li> <li>• Refrigerated, smoked seafood such as smoked salmon, lox</li> </ul>
Sprouts	Sprouts that are cooked very well	Raw sprouts such as alfalfa, clover, radish and mung bean
Beverages	<ul style="list-style-type: none"> <li>• Cook unpasteurized fruit juice and cider until they reach a rolling boil</li> <li>• Store bought fruit juice and cider that are pasteurized (look for the word 'pasteurized' on the package label)</li> <li>• Bagged tea</li> <li>• Tap water (if city water supply)</li> <li>• Well water tested regularly and found to be safe and then boiled for 15 to 20 minutes and consumed within 48 hours</li> <li>• Bottled water</li> <li>• Nondairy substitutes, such as almond, soy, rice and walnut milk</li> </ul>	<ul style="list-style-type: none"> <li>• Unpasteurized fruit juice and cider including raw juices from a juice bar</li> <li>• Loose leaf tea</li> <li>• Well water</li> </ul>

Type of Food	Safer Food Choices	Foods to Avoid
Other	<ul style="list-style-type: none"> <li>• Commercial pasteurized grade A honey</li> <li>• Jam, jelly, syrups (refrigerate after opening)</li> <li>• Condiments such as mustard, soy sauce, BBQ sauce (refrigerate after opening)</li> <li>• Commercially prepared pickles, olives (refrigerate after opening)</li> <li>• Fresh (well washed) herbs and dried herbs and spices</li> </ul>	<ul style="list-style-type: none"> <li>• Raw or unpasteurized honey</li> <li>• Uncooked kimchi, fresh sauerkraut</li> </ul>

Sources: Health Canada and the Canadian Food Inspection Agency, Seattle Cancer Alliance, Hamilton Health Sciences

## Shopping

**Safe eating begins with the food you buy.**

- Put refrigerated foods into your shopping cart last. This will limit the amount of time the food sits at room temperature.
- Wash reusable shopping bags regularly with warm soapy water.
- Buy packages that are properly sealed and cans with no dents, bulges, cracks or leaks.
- Avoid buying products from open bins and foods that are displayed without a package. Examples of foods to avoid are: bulk food items, unwrapped bakery products and items from the deli counter.
- Avoid cream and custard desserts and pastries that are not refrigerated or frozen.



- Do not buy meat that is displayed raw, unwrapped and touching other raw or cooked meats.
- Put meat, poultry and fish in plastic bags to limit cross contamination. Tell the check out clerk to place these items in separate bags from ready-to-eat foods and fresh produce.
- Avoid tasting free food samples.
- Buy a 1 week supply of raw fruits and vegetables at a time. Avoid buying fruits and vegetables that are bruised, damaged or overly ripe. Avoid buying pre-cut fruit and vegetable trays.
- Buy eggs that are refrigerated and have no cracks.
- Buy frozen foods that are solid and have no ice crystals on the outside of the package. This may be a sign that the food was thawed and refrozen.
- Check 'best before' dates. Choose dates that are far into the future. Examples of foods with a "best before" date are milk, cheese and eggs.
- Check 'packaged on' dates. This is the day the food was wrapped. For instance, raw meat will have a date stamped on its package. This date should be the day of your shopping trip and not a day or two before.

## Storage

- Store foods that need to be refrigerated or frozen as soon as you return home from grocery shopping. Do not leave them at room temperature.
- Label frozen food with the date of purchase or preparation.
- Separate the raw foods from the ready-to-eat foods.
- Wrap opened dry goods before you store them.
- Rotate food that is in the fridge or in the cupboard so the older items are used first.
- Do not store any food supplies under the kitchen sink.

## Preparation

### Clean your hands, kitchen items and food.

- Wash your hands often and dry hands with a paper towel or cloth hand towel that is changed daily. Don't forget to wash your hands after using the washroom, taking out the garbage or touching your pet. This is one of the best ways to reduce contamination of food and the spread of illness.
- Clean kitchen surfaces, dishes, utensils, can openers, the inside of the microwave and reusable shopping bags using warm, soapy water. This will lower the chance of bacteria and germs spreading from one surface to another.
- Wipe dust or dirt off the lids of canned goods with a clean, damp towel before opening. Do not use cans that spurt when opened, look bubbly or have a bad smell.
- Avoid home canned foods as they may contain harmful bacteria. Use only store bought canned products.
- Avoid making homemade yogurt or other milk products.
- Use a clean utensil (spoon or fork) each time food is tasted during preparation. Do not taste foods that contain raw eggs before cooking.

### Cutting boards

- Use at least 3 separate cutting boards. One for cooked foods, one for vegetables and one for raw meat, poultry, fish and seafood.
- Non-porous acrylic (not made from natural fibers), plastic, or glass cutting boards and solid wood cutting boards can be washed in a dishwasher (laminated boards may crack and split).
- Wash the boards with hot, soapy water then rinse with hot water after each use and let them dry very well.
- Disinfect boards used for raw meat, poultry, fish and seafood with a bleach solution and rinsed with hot water after each use (see Bleach Solution for Disinfecting).

### **Bleach Solution for Disinfecting:**

- ½ teaspoon (2 millilitres) bleach
- 2 cups (500 millilitres) water

Mix bleach with water and store in a spray bottle. Make sure it is clearly labeled! Keep it in a handy place away from food and from children.

## **Tips for washing fruits and vegetables**

- ✓ Wash fruits and vegetables very well under cold, running water before peeling or cutting.
- ✓ Avoid soaking fruits and vegetables in a sink full of water. Sinks can contain bacteria that can be transferred to your food.
- ✓ Scrub fruits and vegetables that have a thick, rough skin or have dirt on the surface with a clean vegetable scrubber.
- ✓ Throw out the outside leaves of leafy vegetables and wash each inside leaf separately.
- ✓ Rinse packaged and prepared fruits and vegetables even if it is marked 'pre-washed'. Do not use soap as this can be absorbed into the fruits and vegetables.
- ✓ Do not use soap and vegetable rinses as this can be absorbed into the fruits and vegetables.

## **The Temperature Danger Zone**

Bacteria that cause food borne illness grow the quickest when the temperature is between 4 °C and 60 °C (40 °F and 140 °F). This is called the temperature danger zone. Cooking foods to the safe internal temperature will kill the bacteria in the food. Keeping foods in the fridge or freezer will stop the bacteria from growing to dangerous levels.

## How to avoid the temperature danger zone:

Follow the 2-hour rule: **refrigerate**, **freeze** or **consume** high risk foods within 2 hours of buying or preparing it.

High risk foods left in the danger zone (between 4 °C and 60 °C / 40 °F and 140 °F) for less than 2 hours can be safely put in the fridge or used right away. If high risk food is left in the danger zone for 2 or more hours, bacteria can continue to grow and make the food not safe to eat.

High risk foods are:

- meat
- fish
- poultry
- eggs
- fresh cut or peeled fruits/vegetables
- sprouts
- dairy products
- shellfish (raw or cooked)
- seafood
- sauces
- gravies
- homemade garlic in oil mixtures
- any casseroles or salads that contain the foods above

## Cooking

- Thaw frozen meat by placing it on a tray on the bottom shelf of the fridge. Do not let it drip on other foods, especially ready-to-eat foods. Never thaw food at room temperature.
- Cook food until the thickest part reaches a safe temperature and check by using a digital food thermometer. Do not depend on look, texture and colour to check if the food is cooked properly. Clean the digital thermometer in warm, soapy water between temperature readings to avoid cross-contamination.

- Read the manufacturer's instruction of your food thermometer carefully. For most thermometers, simply insert it into the thickest part of the food, away from fat, bone or gristle. Food is ready to eat when it has reached the proper internal temperature. See table on page 14.
- Do not stuff poultry. Cook stuffing separately in its own dish to make sure the different internal temperatures of the bird and the stuffing can be reached.
- Cook eggs until the white and yolk are completely firm.
- Use different plates and utensils for raw food and cooked foods.

### **Tips for barbecuing:**

- ✓ Use 3 separate plates—one for the cooked foods, one for vegetables or fruit, and one for raw meat, poultry, tofu, fish and seafood.
- ✓ Keep all raw meat away from other foods
- ✓ Do not use marinade that has been in contact with raw meat on cooked food. Set aside some of the marinade.
- ✓ Use separate utensils, cutting boards, dishes and other equipment for cooked and raw foods

### **Tips for microwave cooking:**

- ✓ Place food in a microwave safe container.
- ✓ Stir and turn food several times during cooking so you do not get cold spots that bacteria can still survive in.
- ✓ Cover foods with a lid or paper towel.
- ✓ Follow standing times in the recipe or package directions. Food needs this time to finish cooking.
- ✓ Measure the internal temperature at the end of the standing time. Remember to insert the thermometer properly.

## Internal Cooking Temperature Chart

Use this chart to know what temperature cooked food should be at to ensure it is not contaminated and safe to eat. Checking for internal cooking temperature means checking the temperature at the thickest part of the food.

Type of food	Temperature reading for safe eating
Beef, Veal, Lamb (pieces and whole cuts)	71 °C (160 °F) medium 77 °C (170 °F) well done
Ground Meat and Meat Mixtures (i.e. burgers, sausages, meatballs, meatloaf, casseroles)	71 °C (160 °F) beef, veal, lamb, pork 74 °C (165 °F) poultry
Poultry (i.e. chicken, turkey, duck)	74 °C (165 °F) pieces 85 °C (185 °F) whole
Pork (pieces and whole cuts)	71 °C (160 °F)
Egg dishes	74 °C (164 °F)
Other (for example hot dogs, stuffing, leftovers, seafood)	74 °C (165 °F)

Source: Health Canada and the Canadian Food Inspection Agency

## What to do with Leftovers

- Place in a covered container and put in the fridge right away.
- If there are large amounts of food left over, divide into small, shallow containers first. This will make sure the food cools down quickly. Cover containers after the food has cooled.
- Place leftovers that you do not plan to eat within 2-3 days in the freezer.
- Reheat soups, stews and sauces very well. Stir often while heating. Make sure that the temperature reaches 74 °C (165 °F) throughout.
- Throw out food that has been sitting at room temperature for more than 2 hours. If it is a hot summer day, throw it out after 1 hour.
- Place leftover canned food into a glass or plastic container. The container should be covered, labeled, refrigerated and used within a few days.

## Taking Food to a Friend

Home cooked foods can be very comforting for someone who is sick. If you are making something for a friend or a friend is making something for you, follow these guidelines to help keep the food safe.

- Cook food and portion into single serving containers. Refrigerate or freeze it right away. Make sure to label it with the date.
- Pack the food in a cooler or insulated lunch bag with an ice pack before leaving your home. When the food arrives, reheat fully in the microwave following the instructions for microwave cooking.
- Store the food in the fridge right away if you or your friend is not hungry when the food arrives. If the food will not be eaten in 2 to 3 days, it is safer to store it in the freezer.
- Use an insulated thermal container for immediate use of hot liquids, such as soups and stews. This keeps the temperature warm.

**Note:** A thermos can only keep food hot if it has some sauce or liquid. Your food is only safe if it was packed hot (above 74 °C or 165 °F). Once the thermos is opened, any food not eaten within 4 hours should be thrown away. If the thermos has not kept food hot, do not eat it. Not all insulated thermos or containers are the same so be sure to read the manual for instructions on proper heating and storage.

## Tips for Eating Out

Choose a restaurant or food outlet that has passed its city's food premises inspection and also looks clean. (In Toronto, the restaurant will have a 'green pass' displayed in its window.) Check the plates, glasses, and utensils. Take a look at the restroom – is it stocked with soap and paper towels?

- ✓ Eat early to avoid crowds.
- ✓ Ask that foods be prepared fresh in fast food outlets.
- ✓ Ask if juice is pasteurized.
- ✓ Avoid raw fruits and vegetables. Save these items for home where you can wash them very well and prepare them safely.
- ✓ Avoid sharing dishes, beverages or condiments.
- ✓ Do not eat salsa and other condiments that are not refrigerated. Use single serving condiments instead of bottles when possible. Examples are ketchup, mustard and relish.
- ✓ Use utensils that have been set on a napkin, clean tablecloth or placement instead of directly on the table.
- ✓ If you take home leftovers, have the server bring you a box and transfer the food yourself. Take the leftovers home to refrigerate right away.

Avoid:

- salad bars
- delis
- sidewalk vendors
- potluck meals
- buffets
- dim sum
- soft-serve ice cream
- milkshake, yogurt and iced coffee machines



## Where to Find More Information

Visit the Patient and Family Library on the main floor at Princess Margaret Cancer Centre, and pick up “Eating Well When You Have Cancer: A guide to good nutrition” from the Canadian Cancer Society.

### Helpful websites

- The Canadian Cancer Society – [www.cancer.ca](http://www.cancer.ca)
- The Canadian Partnership for Consumer Food Safety Education – [www.befoodsafe.ca](http://www.befoodsafe.ca)
- Health Canada – [www.hc-sc.gc.ca](http://www.hc-sc.gc.ca)
- The Canadian Food Inspection Agency – [www.inspection.gc.ca](http://www.inspection.gc.ca)
- Centers for Disease Control and Prevention – [www.cdc.gov](http://www.cdc.gov)
- World Health Organization – [www.who.int](http://www.who.int)
- US Department of Agriculture – [www.foodsafety.gov](http://www.foodsafety.gov)

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