Memorial Sloan Kettering Cancer Center

PATIENT & CAREGIVER EDUCATION

Eating Well After Your Stem Cell Transplant

This information explains what foodborne illness (food poisoning) is. It also explains how to handle food safely to help prevent foodborne illness.

What is foodborne illness?

Foodborne illness is caused by germs that get into the food you eat. Germs such as bacteria, viruses, or parasites can attach to food and grow. You cannot always see, smell, or taste these germs.

Who is at risk to get foodborne illness?

Foodborne illness can happen to anyone, but some people are more likely to get it than others. People are at higher risk if their immune system is weakened by cancer and cancer treatment.

Some people may need to take extra steps to avoid foodborne illness. This includes people who had a stem cell transplant. Your care team will tell you if this applies to you.

What are the symptoms of foodborne illness?

Symptoms of foodborne illness include:

- Vomiting (throwing up)
- Diarrhea (loose or watery poop)
- Pain in your abdomen (belly)
- Flu-like symptoms, such as:

- A fever above 101.3 °F (38.5 °C)
- A headache
- Body aches
- Chills

Symptoms often happen within 1 to 3 days after eating the contaminated food. They can also happen within 20 minutes or up to 6 weeks later.

Contact your healthcare provider right away if you have any symptoms of foodborne illness.

How can I prevent foodborne illness?

It's important to handle food safely to lower your risk. Foodborne illness can be serious or even deadly.

To help keep yourself safe, follow these 4 simple steps: **clean**, **separate**, **cook**, and **chill**.

Clean your hands and surfaces often

- Wash your hands with warm water and soap for at least 20 seconds:
  - Before and after handling food.
  - After using the bathroom, changing diapers, handling garbage, or touching pets.
- Wash cutting boards, dishes, forks, spoons, knives, and countertops with hot soapy water after preparing each food item.
- Use clean glass, plastic, or wooden cutting boards.
- Use paper towels to clean up kitchen surfaces, if you can. Germs can grow on wet or dirty cloth towels and sponges.
  - If you use cloth towels, wash them often using hot water.

    - If you use a sponge, squeeze out all the water after each use. Replace it every 2 weeks.
- Use an antibacterial cleaning spray to clean surfaces. Look for sprays that have bleach or ammonia, such as Lysol® or Clorox®.
- Rinse all fruits, vegetables, and other produce under running water. This includes produce with skins and peels you don't eat, such as bananas and avocados. Scrub firm produce (such as melons, oranges, and lemons) to clean them. If you use a produce brush, clean it every 2 to 3 days. You can put it in your dishwasher or wash it with hot, soapy water.
- Avoid produce that has bruises or blemishes.
- Clean the lids of canned goods before you open them.



Separate raw meats from other foods

- Put raw meats, poultry, and seafood into individual bags in your shopping cart and grocery bags. This will keep any liquids that leak from getting onto other foods.
- Do not store raw meats, poultry, or seafood in your refrigerator above produce or other foods you do not cook before eating.
- Use one cutting board for produce and another one for raw meats, poultry, and seafood.
- Do not use any plate that held raw meat, poultry, seafood, or eggs on it without washing it first. Wash the plate with hot, soapy water before you use it again.
- Do not reuse marinades used on raw meats, poultry, or seafood unless you heat them to a boil first.



Cook foods to the right temperature

- The best way to tell if food is cooked enough to be safe is to check the internal temperature. That's the temperature of the middle of the food. Food color and texture are not always reliable ways to tell if foods are fully cooked.
- Use a food thermometer to check the internal temperature of meat, poultry, seafood, and egg products as they cook. You must cook these foods to a certain temperature to kill any harmful germs. This is called the safe minimum internal temperature (see Table 1).
- Cook eggs until the yolk and white are firm. Choose recipes that only use eggs that are cooked or heated thoroughly.
- When cooking in a microwave oven:
  - Cover, stir, and turn the food to make sure it's cooked evenly. If the microwave doesn't have a turntable, pause it and turn the food yourself once or twice while it's cooking.
  - Always wait about 10 minutes after the food is done before checking the food's internal temperature with a food thermometer. This lets the food finish cooking.
- When reheating sauces, soups, or gravy, heat them to a boil.
- Eat reheated leftovers within 1 hour.
- Do not reheat leftovers more than once. If you don't finish the food you reheated, throw it away. Do not put it back in the refrigerator.

How do I know when cooked food is safe to eat?

Measure the internal temperature of your food as it's cooking. Different foods must reach a certain internal temperature before they are safe to eat.

Use a food thermometer to measure the internal temperature of your food as it's cooking. Push the thermometer into the center of the food. The numbers on the thermometer will go up slowly. Hold the thermometer in place until the numbers stop going up.

Table 1 shows the minimum (lowest) internal temperatures for a food to be safe to eat. The temperature on the thermometer should be the same or higher than the temperature in the table. If the temperature is lower than the temperature in the table, keep cooking the food. Once the food reaches the temperature in the table, it's fully cooked and safe to eat.

Type of food	Safe minimum internal temperature
Beef, pork, veal, and lamb (steaks, roasts, and chops)	145 °F (63 °C) with a 3-minute rest time
Beef, pork, veal, and lamb (ground)	160 °F (71 °C)
Poultry (such as chicken, turkey, and duck)	165 °F (74 °C)
Egg dishes and sauces	160 °F (71 °C) or until the yolk and white are firm
Fish and shellfish	145 °F (63 °C) and flesh is opaque (not see-through)
Leftovers and casseroles	165 °F (74 °C)

Table 1. Safe minimum internal food temperatures

Chill foods right away

- Make sure the refrigerator is 40 °F (4 °C) or lower inside.
- Make sure the freezer is 0 °F (-18 °C) or lower inside.
- Refrigerate or freeze meat, poultry, eggs, seafood, and other perishables (foods that can go bad). Do this within 2 hours of cooking or buying them. If the temperature outside is above 90 °F (32 °C), refrigerate or freeze them within 1 hour.
- When it's hot out, keep perishables cold when you bring them home after shopping. Use an insulated bag, or a cooler with ice or frozen gel packs.
- Defrost food in the refrigerator, cold water, or a microwave. If you use cold water or a microwave, cook the food right away once it's defrosted. Never defrost food at room temperature, such as on the countertop.
- When you marinate food, always marinate it in the refrigerator.
- Split up large amounts of leftovers into shallow containers before refrigerating them. This helps them cool more quickly.
- Eat leftovers within 2 days.

Common questions

How can I store my groceries safely?

- Keep perishable foods cold if you need to make a stop after grocery shopping. Use an insulated bag or cooler with ice or frozen gel packs to keep them cold.
- Put eggs and milk on a shelf inside the refrigerator. Don't store them in the refrigerator door. Food stays cooler inside the refrigerator than on the door.
- If you use a grocery delivery service:
  - Make sure all refrigerated and frozen items are at a safe temperature when they're delivered.
  - Put these items into the refrigerator or freezer right away.

How can I make safe choices while grocery shopping?

- Check containers for an expiration date. Do not buy the item if the date has passed.
- Do not buy canned, jarred, or boxed foods with dents, swelling, or a broken seal.
- Do not buy foods from self-service bulk containers or bins. This includes nuts, grains, or other items that you portion into containers yourself.
- Pick up cold and frozen foods, such as milk and frozen vegetables, at the end of your shopping trip. This helps limit the time they will be outside of a refrigerator or freezer.

Is it safe to eat at restaurants?

Most people should avoid eating at restaurants for about 3 months after their stem cell transplant. Talk with your healthcare provider about when it's safe for you to eat at restaurants.

When it's safe to start eating at restaurants, follow these guidelines to lower

your risk of foodborne illness:

- Choose the restaurant carefully. You can see a restaurant's recent health inspection score by visiting your local Department of Health (DOH) website.
- Order food that's properly cooked. Send back any meat, poultry, fish, or eggs that are undercooked. Food that's steaming hot is usually safer than room temperature and cold foods (such as sandwiches and salads).
- Refrigerate any leftovers within 2 hours of eating out. Reheat them until they're steaming hot (165 °F) and eat them within 2 days.
- Avoid foods that may have raw, unpasteurized eggs. This includes Caesar salad dressing, fresh mayonnaise or aioli, and hollandaise sauce.

Some restaurant foods are riskier than others. These include:

- Foods from buffets and salad bars.
- Food that isn't cooked to order, such as fast food and other foods stored under heat lamps.
- Containers used by many people, such as condiments and milk at a cafe.
- Any food handled by employees without gloves or utensils.

Take-out food, delivery food, and food from food trucks can also be riskier because food may not be kept hot or cold enough during transit.

Is it safe for me to take dietary supplements?

How dietary products are made and stored is not regulated in the United States. This means they can be a health risk (infection or foodborne illness). Dietary supplements can also keep some medications from working as well as they should.

Talk with your MSK healthcare provider before taking any supplements, probiotics, homeopathic remedies, or herbal products. This includes as St. John's wort and traditional Chinese medicines, such as herbs, roots, or seeds.

How do I know if my drinking water is safe?

Tap water from most big cities (such as New York City) is safe to drink. If you're not sure if the tap water in your area is safe, check with your local health department.

Never drink water from lakes, rivers, streams, or springs.

If you use well water that's not tested for bacteria, boil it before you drink it. To do this:

- Bring the water to a rolling boil (large, fast-moving bubbles) for 15 to 20 minutes.
- Store the water in the refrigerator and use it within 48 hours (2 days).
- After 2 days, pour any leftover water down the drain. Do not drink it.

You can also use bottled water instead of well water.

Visit www.epa.gov/privatewells/potential-well-water-contaminants-and-their-impacts for more information about well water.

What foods I should avoid eating?

Some foods are more likely to cause a foodborne illness than others. It's best to avoid:

- Raw or undercooked meat, poultry, seafood (including sushi), eggs, and meat substitutes, such as tempeh and tofu.
- Unpasteurized (raw) milk, cheese, other dairy products, and honey.
- Unwashed fresh fruits and vegetables.
- Raw or uncooked sprouts, such as alfalfa and bean sprouts.
- Cold or uncooked deli meats (cold cuts) and hot dogs. Cooked meats on other foods, such as pepperoni on pizza, are safe to eat.

Infections can also happen when sickness spreads through foods. Visit www.cdc.gov/foodborne-outbreaks to find news about current cases in the

U.S.

A clinical dietitian nutritionist can help you make safe food choices by understanding risks of eating certain foods. Talk with them about the risks of eating the foods in listed in the table below.

Food group	Talk with a clinical dietitian nutritionist about the risks of eating these food items
Milk and dairy	• Milk, cheese, and other dairy products that are not in a refrigerator. • Cheese sliced at a deli counter. These cheeses may be sliced near deli meats. Choose sealed, pre-packaged cheese instead. • Unrefrigerated desserts or pastries with cream fillings or frosting. Choose packaged, shelf-stable products instead. • Soft-serve ice cream, soft-serve yogurt, and ice cream scooped at a restaurant.
Meat, poultry, seafood, and eggs	• Meat sliced at a deli counter. Choose sealed, pre-packaged deli meat instead. • Raw or partially cooked fish and shellfish. This includes caviar, sashimi, sushi, ceviche, and cold smoked seafood, such as lox. • Clams, mussels, and oysters in the shell. • Refrigerated pâtés and meat spreads.
Fruits and vegetables	• Produce that is bruised, dented, or has other markings on it. • Salads and produce from a deli or salad bar. • Pre-cut fruits and vegetables. • Vegetarian sushi, unless you make your own at home. Vegetarian sushi made at a store or restaurant may be prepared near raw fish.
Drinks	• Unpasteurized eggnog, apple cider, or other fruit or vegetable juices. • Fresh-squeezed fruit or vegetable juices, unless you make your own at home. • Unpasteurized beer and wine, such as microbrewery beers and those that aren't shelf-stable. Talk with your doctor before having any alcohol. • Fountain soda and other fountain drinks. • Water from a water fountain or other shared container.
Nuts and grains	• Unroasted nuts in the shell.

Other	• Herbal and nutritional supplements, including probiotic supplements to improve gut health. These usually come in capsule, gummy, powdered, or pill form. • Shared containers used by many people, such as condiments and milk at a coffee shop. • Any unpackaged, communal, or shared food items. This includes free samples or shared non-perishable pantry foods in your home.

General nutritional guidelines

Your body needs a balance of calories and protein to work its best. The tips in this section will help you increase the calories and protein in your diet.

These suggestions may be different from the general nutrition guidelines you already know. Your clinical dietitian nutritionist can help you find an eating plan that works best for you.

Tips for adding more calories to your diet

- Don’t eat foods that are fat-free or reduced in fat. Avoid food and drink labels that say “low-fat,” “non-fat,” or “diet.” For example, use whole milk instead of skim.
- Snack on dried fruits, nuts, or dried seeds. Add them to hot cereals, ice cream, or salads.
- Add butter, margarine, or oils to potatoes, rice, and pasta. You can also add them to cooked vegetables, sandwiches, toast, and hot cereals.
- Use high-calorie dressings on salads, baked potatoes, and chilled cooked vegetables (such as green beans or asparagus).
- Add sour cream, half and half, or heavy cream to mashed potatoes and cake and cookie recipes. You can also add it to pancake batter, sauces, gravies, soups, and casseroles.
- Use mayonnaise, creamy salad dressing, or aioli sauce in salads, sandwiches, and vegetable dips.
- Top your ice cream or unfrosted cakes with sweetened condensed milk. Mix the condensed milk with peanut butter to add more calories and flavor.

- Drink homemade shakes and other high-calorie, high-protein drinks (such as Carnation® Breakfast Essentials or Ensure®).

Tips for adding more protein to your diet

- Eat foods that are rich in protein, such as chicken, fish, pork, beef, lamb, eggs, milk, cheese, beans, and tofu.
- Add powdered milk to creamy soups, mashed potatoes, milkshakes, and casseroles.
- Snack on cheese or nut butters (such as peanut butter, cashew butter, and almond butter) with crackers, fruits, or vegetables (such as apples, bananas, and celery).
- Blend nut butter into your shakes.
- Add cooked meats to soups, casseroles, salads, and omelets.
- Add wheat germ or ground flax seeds to cereals, casseroles, yogurt, and meat spreads.
- Add grated cheese to sauces, vegetables, and soups. You can also add it to baked or mashed potatoes, casseroles, and salads.
- Add chickpeas, kidney beans, tofu, hard-boiled eggs, nuts, and cooked meats or fish to your salads.

Managing symptoms and side effects with nutrition

Early satiety

Early satiety is when you feel full more quickly than usual. For example, you may feel like you can't eat any more when you're only halfway through your meal.

If you feel full quickly, try to:

- Eat small, frequent meals. For example, have 6 small meals instead of 3 large ones.

- Drink most of your liquids before or after meals.
- Choose foods that are higher in calories and protein when making meals.
- Do light physical activity (such as walking). This helps food move through your digestive system.

Nausea

Nausea (feeling like you're going to throw up) can be caused by radiation therapy, chemotherapy, and surgery. It can also be caused by pain, medication, and infection.

If food odors (smells) make you nauseous:

- Try cold foods (such as a sandwich or salad). Cold foods don't smell as strong as hot foods.
- Leave the area while hot foods are cooking, if you can.
- Ask someone else to plate your food for you.
- Let your food cool down for a few minutes before eating.
- Avoid places with strong odors.

The following tips may also help you avoid nausea:

- Eat small, frequent meals. This can stop you from getting too full and help you eat more food throughout the day.
- Drink most liquids between your meals, not with them. This can help you avoid feeling full too fast or feeling bloated.
- Eat slowly and chew your foods well. Avoid moderate or intense physical activity right after meals.
- Eat your meals in a pleasant setting. Choose a relaxing place with a comfortable temperature. Wear loose-fitting clothing to stay comfortable.
- Eat with friends or family. This may help distract you from your nausea.
- Avoid foods that are:
    - High-fat, such as fatty meats, fried foods (such as eggs and French fries),

and soups made with heavy cream
    - Very spicy, such as foods made with heavy spices
    - Very sweet

Read *Managing Nausea and Vomiting* (www.mskcc.org/pe/nausea-vomiting) for more information.

Diarrhea

Diarrhea is frequent, loose, watery bowel movements. It causes food to move quickly through your intestines.

- Drink at least 8 to 10 (8-ounce glasses) of liquids daily. This will help replace the water and nutrients you lose when you have diarrhea.
- Avoid foods that are very hot, very cold, high-sugar, high-fat, or spicy. These are hard on your digestive system and may make your diarrhea worse.
- Avoid raw fruits and vegetables, whole nuts, and seeds and vegetables that can cause gas (such as broccoli, cauliflower, cabbage, beans, and onions).
- Choose fruits and vegetables that are well-cooked, peeled and puréed, or canned.

Read *Managing Diarrhea* (www.mskcc.org/pe/diarrhea) for more information.

Constipation

Constipation is having fewer bowel movements than usual. Constipation can be caused by many things, including your diet, activity, and lifestyle. Some chemotherapy and pain medications can also cause constipation.

If you're constipated, try eating more high-fiber foods. Add fiber to your diet one food at a time. Examples of high-fiber foods include:

- Fruits
- Vegetables
- Whole grains (such as whole-grain cereals, pastas, muffins, breads, and brown rice)

- Nuts and seeds

Be sure to drink enough liquids to prevent gas and bloating. Try to drink at least 8 to 10 (8-ounce) glasses of liquids per day. This will help keep your bowel movements soft.

Read *How to Manage Constipation* (www.mskcc.org/pe/constipation), or watch *How To Manage Constipation During Chemotherapy* (www.mskcc.org/pe/constipation-during-chemo) for more information.

Dry or sore mouth

When your mouth is dry or sore, eating can be hard or painful. Some foods may be hard to chew and swallow. The way you eat can make a difference.

- Cook your foods until they're soft and tender. Use a blender to purée foods.
- Cut your foods into small pieces that are easy to chew.
- Rinse your mouth with water often.
- Drink liquids with your meals. Take small sips between bites.
- Use a straw when you drink. This will keep the liquid from touching your sore mouth.
- If you have dry mouth, try sugar-free mints or gum. This will help you make more saliva.

Taste changes

Chemotherapy, radiation therapy, and some medications can change your sense of taste. Changes in taste be different from person to person.

If your food seems tasteless, use more spices and flavorings (unless they cause discomfort). For example:

- Add sauces and condiments (such as soy sauce or ketchup) to your food.
- Marinate your meats or meat substitutes in salad dressings, fruit juices, or other sauces.
- Use onion or garlic to flavor your vegetables or meats.

- Add herbs (such as rosemary, basil, oregano, and mint) to your food.

If there's a bitter or metallic taste in your mouth:

- Rinse your mouth with water before meals.
- Maintain good oral hygiene (keep your mouth clean) by:
  - Brushing your teeth (if your doctor says it's okay)
  - Brushing your tongue
  - Drinking more liquids to stay hydrated
- If meats taste bitter, try marinating them in sauces or fruit juices or squeeze lemon juice on them, if your mouth isn't sore.
- Get some of your protein from meat substitutes (such as dairy products and beans).
- Use plastic utensils to reduce the metallic taste.
- Try sugar-free mints or gum.

Fatigue

Fatigue is feeling more tired or weak than usual. It's the most common side effect of cancer and cancer treatments. Fatigue may keep you from doing your daily activities. It can be caused by many things, such as:

- Poor appetite.
- Depression.
- Nausea and vomiting.
- Diarrhea or constipation.

Managing these things can give you more energy and help you feel less fatigued. It can also increase your feeling of well-being. Your healthcare team can help you.

Saving your energy can also help you feel less fatigued. You can do this by:

- Asking family and friends for help with shopping and making your meals.

- Buying premade or takeout foods when your energy is low.
- Keeping ingredients and utensils that you use often close at hand.
- Sitting instead of standing when cooking.
- Eating small, frequent, high-calorie meals or snacks. This may help your body need less energy to digest your food.

Often, doing physical activity may actually increase your energy levels. It can also make it easier to do your usual daily activities, increase your appetite, and help you be in a better mood. Talk with your doctor about doing light-to-moderate intensity activities, such as walking or gardening.

If you live alone and can't shop for food or make meals, you may be eligible for food programs, such as God's Love We Deliver or Meals on Wheels. There may be age or income requirements for some programs. Your social worker can give you more information.

If you have questions or concerns, contact your healthcare provider. A member of your care team will answer Monday through Friday from 9 a.m. to 5 p.m. Outside those hours, you can leave a message or talk with another MSK provider. There is always a doctor or nurse on call. If you're not sure how to reach your healthcare provider, call 212-639-2000.

For more resources, visit www.mskcc.org/pe to search our virtual library.

Eating Well After Your Stem Cell Transplant - Last updated on May 7, 2026
All rights owned and reserved by Memorial Sloan Kettering Cancer Center