



# Guidelines for the Low Microbial Diet

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This diet is prescribed when you have had a recent bone marrow transplant or have a low neutrophil count. A neutrophil is a type of white blood cell. Your white blood cell count tells how well your body can fight off infections.

This diet may reduce the risk of illness from foods containing microbes. Microbes include bacteria, viruses, yeast or molds.

The first section of these guidelines covers food safety. The second section covers diet guidelines. Continue to follow these guidelines until you have spoken to someone on your healthcare team. This includes your doctor, nurse, or dietitian.

# **FOOD SAFETY GUIDE**

## **What Makes Food Unsafe?**

Harmful microbes can attach to foods and grow. You cannot always see, smell, or taste them.

Microbes are more likely to be found on:

- Milk and other dairy food items that are not refrigerated.
- Undercooked and raw eggs and foods that have raw eggs.
- Undercooked or raw meat, poultry and seafood.
- Certain fruits and vegetables (listed on page 9-10).
- Unpasteurized or untreated juices, for example, fresh squeezed juices.

## **Buying Food that is Safe to Eat**

- Do not buy canned foods if the can has dents or is swollen.
- Do not buy food in jars if the jar is cracked or the lid is not tightly closed.
- Open egg cartons to see if any are broken or cracked. Only buy eggs that are refrigerated in the store.
- Separate ready-to-eat and raw foods. Put the raw meat, poultry, seafood and other raw foods in plastic bags before they go into your cart.
- When grocery shopping, pick up milk and other cold foods last. This shortens the time they are not refrigerated.
- Check containers for the expiration date. Buy and use food before that date.

## **Storing Food Safely**

- Store cold food immediately after shopping.
- Keep your refrigerator at 33-40°F.
- Keep your freezer at 0°F or below.
- Put eggs and dairy inside the refrigerator; do not store them in the door. The temperature in the back is cooler than the door storage area.

- Store leftovers in a shallow container. To cool leftovers faster, put them in the freezer or refrigerator as soon as you finish eating. Use them within 1-2 days to prevent spoilage.

## Handling Food Safely

- Thoroughly rinse fresh produce under running tap water. This includes produce with skin and rinds. Rinse thick-skinned produce under warm, running warm tap water or scrub with a clean vegetable brush. Then, cut or peel. Never use bleach or detergent to wash fresh fruits and vegetables.
- Remove and throw away any damaged or bruised areas on produce.
- Separate raw meats and produce from ready-to-eat food.



## Preparing Food Safely

- Thaw foods by using only one of the following methods:
  - In the refrigerator one day before cooking.
  - In the microwave, using defrost setting. Cook right away.
- Cook to proper temperatures (see cooking temperatures chart on page 3).
- Use a food thermometer to test the temperatures of cooked and reheated foods.
- Reheat leftovers to 165°F.
- Cook meat until it is no longer pink and the juices run clear. Do not eat hamburgers and other meat products if the meat looks undercooked.

- Cook fish until it flakes.
- Cook egg white and yolks until they are firm.

## Cooking Temperatures

Use tools such as thermometers and temperature charts to help you cook and avoid potential food-borne illnesses. Place your thermometer inside of the food item before reading the temperature.

### Cooking Temperature Guidelines

Food Item	Safe Minimum Temperatures
<b>Egg and Egg Dishes</b>	
Eggs	Cook until yolk and white are firm
Egg Dishes & Egg Sauces	160°F
<b>Poultry, Meat and Meat Mixtures</b>	
Turkey, Chicken, & Duck <i>Whole Pieces, &amp; Ground</i>	165°F
Beef, Veal, Lamb, Pork <i>Ground</i>	160°F
Beef, Veal, Lamb, Pork <i>Steaks, Roasts, &amp; Chops</i>	145°F with a 3-minute rest time
Cured Ham	165°F
<b>Seafood/Fish</b>	145°F
<b>Leftovers</b>	165°F



## **Leftovers**

- Sauces, soups, and gravies should be reheated by bringing them to a boil.
- When microwaving food or reheating leftovers, stir, cover and rotate food for even heating. Heat food until it reaches at least 165°F throughout for 15 seconds using a food thermometer.
- Be sure to let the food cool so you do not burn your mouth.
- Eat reheated leftover foods within one hour.

**As a rule of thumb: WHEN IN DOUBT, THROW IT OUT!**

## **Kitchen Cleanliness**

Prepare and eat food in a clean area to prevent the spread of microbes.

- **Counter Tops**
  - Use paper towels or clean cloths instead of sponges to clean kitchen surfaces.
  - Use an antibacterial cleansing spray to clean surfaces. Look for products that have bleach or ammonia. Examples are Lysol® Food Surface Sanitizer and Clean-Up Cleaner. \*
- **Cutting Boards and Equipment**
  - Use one cutting board for fresh-washed produce and bread and a separate one for raw meat, poultry and seafood. This will prevent a ready-to-eat food from picking up bacteria from raw meat, poultry or seafood.
  - Wash cutting boards and brushes with hot, soapy water after each use. Rinse with clean water. Air dry or pat dry with clean paper towels. You can also wash solid acrylic,

plastic or glass boards, solid wood boards and produce brushes in a dishwasher.

- Disinfect both wooden and plastic cutting boards with a mixture of one tablespoon of unscented, liquid chlorine bleach per gallon of water. Flood the surface with the bleach solution. Allow it to stand for more than five minutes. Rinse the board with clean water. Air dry or pat dry with clean paper towels.
- All plastic and wooden cutting boards wear out over time. Throw away cutting boards when they are worn or have hard-to-clean grooves or cracks.

\*Use of brand names is for educational purposes only and does not constitute an endorsement.



## ● **Personal Cleanliness**

- Clean hands and good personal hygiene are essential. Wash your hands with soap and water:
  - Before you prepare or eat food.
  - After you prepare raw meat, poultry, fish, and seafood and before you prepare other foods.
  - After you use the restroom.
  - After you clean or change a child.
  - After you cough, sneeze or blow your nose.
  - After you handle garbage.
  - After you treat a cut or wound.

## ● **Safe Water**

- Safe water is water that is free of contaminants or contains an amount of contaminants deemed acceptable by the federal government.
- If you are not sure if your water is safe, check with the local health department or boil or filter water. Use commercially bottled water if you think the tap water may not be safe.
- Never drink water from lakes, rivers, streams, springs or wells.

## **Eating out at Restaurants:**

Choose restaurants carefully. Local health departments inspect restaurants to make sure that they are clean, and that they follow safe food practices. You can find out how your local restaurant of choice did on recent health inspection by going to your local Department of Health (DOH) website; for example: <http://www.nyc.gov/html/doh/html/rii/index.shtml>.

You can also ask your local restaurant about their food safety training rules. This is good to know when you are planning to eat out.



- Order all foods to be well done.
- Do not order foods that may have raw meat and fish or raw eggs, such as Caesar salad dressing, Hollandaise Sauce, sushi and sashimi, tartare and some homemade ice creams or custards, mousse and tiramisu.
- Ask the wait-staff if you are not sure of the ingredients in your meal.

- Do not eat foods from buffets and salad bars.
- Request that foods are cooked fresh and not served from steam tables or kept warm by heat lamps.
- Request single serving condiments. Multiple customers may use open containers.
- Do not eat soft-serve ice cream and soft serve frozen yogurt. The dispensers may not be cleaned on a regular basis.
- Always order a whole or personal pizza. Do not order single slices since they are often kept warm under heat lamps.



## **Herbal Supplements:**

Do not take homeopathic remedies or herbal products including Traditional Chinese Medicines.

- There are no federal standards for these products in the United States. They may be contaminated during production or storage.
- Contaminated products may be a health risk and may cause infection.
- Herbal products may interfere with or change the activity of a prescription medicine.

- Always talk to your physician before taking any homeopathic remedy or herbal product that is not prescribed.

## GUIDELINES FOR A LOW MICROBIAL DIET

Food Group	Recommended	Not Recommended
<b>Breads, Grains, and Cereals</b>	<ul style="list-style-type: none"> <li>•All breads, rolls, bagels, waffles, French toast, muffins, sweet rolls, and pancakes</li> <li>•Potato chips, corn chips, tortilla chips, pretzels, and popcorn</li> <li>•Any cooked or ready-to-eat cereal purchased pre-packaged from a store</li> <li>•Cooked rice, pasta, and other grains</li> </ul>	<ul style="list-style-type: none"> <li>•Foods with raw (not cooked or baked) grains</li> <li>•Undercooked or raw brewer's yeast</li> <li>•Breads, rolls, and pastries in self-service bins</li> <li>•Un-refrigerated cream-filled pastry products</li> </ul>
<b>Milk, Dairy Products, Formulas, and Dairy Substitutes</b>	<p><u>Pasteurized</u></p> <ul style="list-style-type: none"> <li>•Grade A commercially available milk and milk products</li> <li>• Commercial eggnog</li> <li>•Soy milk, rice milk, and oral supplements such as Ensure® or Glucerna®*</li> <li>•Yogurts, including those made with</li> </ul>	<p><u>Unpasteurized</u></p> <ul style="list-style-type: none"> <li>•Raw milk, cheese, yogurt, or other milk products</li> <li>•Eggnog (homemade)</li> <li>•Soft-serve ice cream or yogurt</li> <li>•Un-refrigerated, cream filled pastry products</li> </ul> <p><u>Cheese</u></p> <ul style="list-style-type: none"> <li>•All mold-ripened cheeses, such as</li> </ul>

**Milk, Dairy Products, Formulas, and Dairy Substitutes (cont'd)**

- live cultures
- Sour cream
- Puddings made at home or purchased pre-packaged from a store
- Pre-packaged ice cream, frozen yogurt, sherbet, popsicles, ice cream bars, and fresh homemade milkshakes
- Commercially sterile ready-to-feed and liquid concentrate infant formulas
- Dry, refrigerated, or frozen pasteurized whipped topping

Cheese

- Processed cheese slices and spreads, cream cheese, cottage cheese, and ricotta cheese
- Commercially packaged hard and semi-soft cheese such as mild and medium cheddar, mozzarella, parmesan, Swiss
- Cooked** soft cheeses such as brie, camembert,

- Roquefort, Muenster, blue cheese, sharp cheddar, feta cheese
- Soft cheeses such as: brie, farmer's cheese, camembert, or Mexican style cheese (Queso Blanco or Queso Fresco)
- Prepared in delicatessens
- Containing chili peppers or other uncooked vegetables

	feta, and farmer's cheese	
<b>Eggs</b> <b>Eggs (cont'd)</b>	<ul style="list-style-type: none"> <li>• Well-cooked eggs (white and yolk are firm)</li> <li>• Pasteurized eggs, pasteurized egg substitutes and powdered egg whites</li> </ul>	<ul style="list-style-type: none"> <li>• Undercooked or raw eggs, and non-pasteurized egg substitutes</li> <li>• Salad dressings containing raw eggs</li> </ul>
<b>Meat, Meat Substitutes, Poultry, and Seafood</b>	<ul style="list-style-type: none"> <li>• All well-cooked meats (see Food Safety Guidelines for temperatures)</li> <li>• Cooked tofu (cut into 1-inch cubes and boiled for at least 5 minutes), or pasteurized tofu</li> <li>• Commercially-prepared cold cuts sold in a sealed package such as salami, bologna, ham if <b>cooked until steaming hot</b> (165°F) before eating and discarded within 48 hours of opening</li> <li>• Thoroughly cooked fish and other seafood</li> <li>• Canned meats and meat spreads</li> <li>• Canned and shelf-stable smoked fish</li> </ul>	<ul style="list-style-type: none"> <li>• Undercooked or raw meats, poultry, fish, including rare or medium-rare items; smoked or pickled fish and meats that have not been further cooked; miso products, tempeh</li> <li>• Freshly sliced deli meats or meats from street vendors</li> <li>• Beef jerky (hard cured salami in natural wrap)</li> <li>• Raw shellfish, raw fish (including caviar), sashimi or sushi, or ceviche</li> <li>• Raw or cooked mollusks (clams, mussels, oysters)</li> <li>• Smoked seafood such as salmon or trout labeled as "nova style," "lox," "kippered," "smoked," or "jerky" unless cooked to 160°F or contained in a cooked dish or casserole</li> <li>• Refrigerated pates and</li> </ul>

		meat spreads
<b>Fruits and Vegetables</b>	<ul style="list-style-type: none"> <li>• Well-washed raw fruits and vegetables</li> <li>• Cooked and canned fruits and vegetables</li> <li>• Cooked frozen fruits and vegetables</li> <li>• Thoroughly washed thick skinned, unblemished fruits before peeling, e.g. citrus, bananas and melons; as slicing through the skin or rind can contaminate the inner fruit</li> <li>• Pasteurized juices and frozen concentrates</li> <li>• Commercially packaged dried fruits</li> <li>• Shelf-stable bottled salsa (refrigerated after opening)</li> <li>• Cooked vegetable sprouts</li> <li>• Fresh, well-washed herbs and dried herbs and spices added to raw or cooked foods (except</li> </ul>	<ul style="list-style-type: none"> <li>• Unwashed raw fruits, vegetables, or herbs</li> <li>• Any fresh raw fruits and vegetables that cannot be thoroughly washed such as: blueberries, strawberries, raspberries, peaches, plums, and grapes (they tend to get mold around their stems)</li> <li>• Any frozen berries and other thin skinned frozen fruits (grapes)</li> <li>• Non-pasteurized fruit and vegetable juices</li> <li>• Fresh fruit salsa or fresh vegetable salsa found in the grocery refrigerator case</li> <li>• Vegetarian sushi</li> <li>• Non-pasteurized items containing raw fruits or raw vegetables found in the grocery refrigerator case</li> <li>• All raw vegetable sprouts</li> <li>• All salads from delicatessens or salad bars</li> </ul>
<b>Fruits and Vegetables (cont'd)</b>		

	pepper which should be added to foods prior to cooking only)	
<b>Beverages</b>	<ul style="list-style-type: none"> <li>• Boiled well water</li> <li>• Tap water and ice made from tap water</li> <li>• Water: Commercially bottled distilled, spring, and natural waters</li> <li>• Pasteurized fruit and vegetable juices</li> <li>• Bottled, canned, or powdered reconstituted beverages</li> <li>• Instant and brewed coffee</li> <li>• Hot brewed teas using commercially packaged tea bags</li> <li>• Pasteurized soy, rice, and almond milk (in addition to other pasteurized dairy substitutes)</li> <li>• Commercial nutritional supplements including Ensure®, Boost®*</li> </ul>	<ul style="list-style-type: none"> <li>• Unpasteurized eggnog or apple cider and other unpasteurized fruit or vegetable juices</li> <li>• Reconstituted protein powder beverages unless approved by your registered dietitian</li> <li>• Unpasteurized beer, such as microbrewery beers and those that are not shelf-stable</li> <li>• Wine</li> <li>• Fountain beverages</li> <li>• Tea made with loose leaves</li> </ul>
<b>Nuts and Dried Fruit</b>	<ul style="list-style-type: none"> <li>• Factory packaged nuts, dried fruits, and raisins</li> </ul>	<ul style="list-style-type: none"> <li>• All nuts or dried fruits that are sold open and in bulk, as in some health</li> </ul>

<p><b>Nuts and Dried Fruit (cont'd)</b></p>	<ul style="list-style-type: none"> <li>• Roasted nuts from a can or jar, shelled</li> <li>• Nuts in baked goods such as peanut butter cookies</li> <li>• Commercially packaged nut butters (such as peanut butter, almond butter, soybean butter)</li> </ul>	<p>food or specialty stores</p> <ul style="list-style-type: none"> <li>• Raw nuts or raw nut butters</li> <li>• Roasted nuts in the shell</li> <li>• Freshly made peanut butter, not commercially packaged</li> </ul>
<p><b>Condiments/ Miscellaneous</b></p>	<ul style="list-style-type: none"> <li>• Salt and sugar</li> <li>• Jellies, syrup and jams (refrigerate after opening)</li> <li>• Catsup, mustard, BBQ sauce, soy sauce, other condiments (refrigerate after opening)</li> <li>• Commercial, heat-treated honey</li> <li>• Pickles, pickle relish, olives (refrigerate after opening)</li> <li>• Vinegar</li> <li>• Vegetable oils and shortening</li> <li>• Refrigerated margarine and butter</li> <li>• Commercial, shelf-stable mayonnaise and salad dressings,</li> </ul>	<ul style="list-style-type: none"> <li>• Raw or unpasteurized honey, honey comb</li> <li>• Whole or ground pepper, unless thoroughly cooked in food</li> <li>• Fresh salad dressings containing raw eggs, cheeses, or ground pepper</li> <li>• Herbal and nutrient supplement preparations</li> </ul>

<p><b>Condiments/ Miscellaneous (cont'd)</b></p>	<p>including blue cheese and other cheese-based salad dressings (refrigerate after opening)</p> <ul style="list-style-type: none"> <li>• Cooked gravy and sauces</li> </ul>	
<p><b>Desserts</b></p>	<ul style="list-style-type: none"> <li>• Refrigerated commercial and homemade cakes, pies, pastries, and pudding</li> <li>• Refrigerated cream-filled pastries</li> <li>• Cookies, both homemade and commercially prepared</li> <li>• Shelf-stable cream-filled cupcakes (such as Twinkies®, Ding Dongs®)* and fruit pies (such as Pop-tarts® and Hostess® fruit pies)*</li> <li>• Candy and gum</li> </ul>	<ul style="list-style-type: none"> <li>• Non-refrigerated cream-filled pastry products (not shelf stable)</li> <li>• All desserts in self-service bins</li> </ul>
<p><b>Eating Outside the Home</b></p>	<ul style="list-style-type: none"> <li>• All foods recommended on previous food groups must come directly off grill/stove-not served on steam table or under heat lamps, such as freshly made pizza,</li> </ul>	<ul style="list-style-type: none"> <li>• Non-pasteurized fruit juices/dairy products, for example juice bars such as Jamba Juice®*</li> <li>• Raw fruits or vegetables including salad bars, sidewalk stands, and desserts with fresh fruit</li> <li>• Delicatessen meat</li> </ul>

<p><b>Eating Outside the Home (cont'd)</b></p>	<p>hamburger directly off grill</p> <ul style="list-style-type: none"> <li>• Single serving condiment packages (do not use pump serve containers)</li> </ul>	<ul style="list-style-type: none"> <li>• Buffets/smorgasbords</li> <li>• Potlucks and sidewalk vendors</li> <li>• Soft serve ice cream and yogurt</li> </ul>
<p><b>Take Out</b></p>	<ul style="list-style-type: none"> <li>• Freshly made pizza not sliced or reheated</li> <li>• Well done hamburger just off the grill</li> <li>• French fries just cooked</li> </ul>	<ul style="list-style-type: none"> <li>• Any food that is not freshly made to order</li> <li>Fast food, such as McDonalds® and Subway®*</li> <li>• Avoid reheated foods</li> <li>Juice bars, such as Jamba Juice®*</li> </ul>
<p><b>Leftovers</b></p>	<ul style="list-style-type: none"> <li>• Refrigerate immediately after eating in shallow dishes to allow for rapid cooling</li> <li>• Refer to Food Safety Guidelines for proper reheating</li> </ul>	<ul style="list-style-type: none"> <li>• Leftovers more than two days old</li> <li>• Any leftover food that has already been reheated once</li> </ul>



## References and Additional Food Safety Resources

Food Safety and Inspection Service

[www.fsis.usda.gov](http://www.fsis.usda.gov)

[http://www.fsis.usda.gov/PDF/Cutting\\_Boards\\_and\\_Food\\_Safety.pdf](http://www.fsis.usda.gov/PDF/Cutting_Boards_and_Food_Safety.pdf)

Government Food Safety information:

[www.foodsafety.gov](http://www.foodsafety.gov)

U.S. Department of Health and Human Services Food and Drug Administration

[www.cfsan.fda.gov](http://www.cfsan.fda.gov)

Centers for Disease Control and Prevention

[www.cdc.gov.foodsafety](http://www.cdc.gov.foodsafety)

Centers for Disease Control and Prevention

Emerging Infectious Diseases

[www.cdc.gov/eid](http://www.cdc.gov/eid)

Partnership for Food Safety Education (Fight BAC!)

[www.fightbac.org](http://www.fightbac.org)

“Ask Karen” (Web-based automated response system-available 24/7)

[http://www.fsis.usda.gov/Food\\_Safety\\_Education/Ask\\_Karen/index.asp?src\\_location=IWT&src\\_page=Home](http://www.fsis.usda.gov/Food_Safety_Education/Ask_Karen/index.asp?src_location=IWT&src_page=Home)

New York City Department of Health and Mental Hygiene Restaurant Inspection Information

[www.nyc.gov/html/doh/html/rii/index.shtml](http://www.nyc.gov/html/doh/html/rii/index.shtml)

### **For More information:**

Call your nearest FDA office. Look for the number in the blue pages of your phone book.

Or call one of the FDA’s toll-free numbers: (888) SAFE-FOOD (723-3366)

(888) INFO-FDA (463-6332)

**This information is brief and general. It should not be the only source of your information on this health care topic. It is not to be used or relied on for diagnosis or treatment. It does not take the place of instructions from your doctor. Talk to your health care providers before making a health care decision.**

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