

Low microbial diet

1. Introduction	1
2. Avoid Guidelines	1
3. Shopping	1
4. Food Storage	2
5. Kitchen Maintenance	2
6. Using Cutting Boards	2
7. Food Preparation	2
8. Safe minimum internal temperature	3
9. Leftovers	4
10. Safe Drinking Water	4
11. Eating Out	4
12. Some tips	4
13. List of recommendations by food groups	5

1. Introduction

The main goal of this diet is to eat healthy food with a minimum number of microorganisms (bacteria, fungi, and viruses). All food products that are allowed in this diet are prepared in such way as to minimize their presence. Microorganisms can get into products from animals being the source of these products and also during their processing, storage, and cooking. Microorganisms can live and multiply on products, but they cannot always be seen, tasted or smelled. Most often it occurs in

- Dairy products
- Undercooked and raw eggs and products that contain raw eggs
- Undercooked or raw meat, poultry, and seafood
- Some fruits and vegetables
- Unpasteurized or unprocessed juices (e.g. freshly squeezed)
- Greens and vegetable sprouts

2. Avoid Guidelines

- Avoid raw and undercooked meat, as well as deli, processed, and cured meats (including salami, bologna, hot dogs, and ham) unless heated until steaming hot.
- Avoid smoked seafood, typically labeled as “lox,” “kippered,” “nova style,” or “jerky.”
- Avoid raw fish and shellfish.
- Avoid raw and undercooked eggs.
- Avoid salad bars, buffets, and potlucks.
- Avoid unpasteurized products, such as unpasteurized dairy items (like milk, cheese, and eggnog), as well as unpasteurized honey, juice, and cider.
- Avoid fresh and packaged foods that are past their “use by” and expiration dates.
- Avoid consuming raw sprouts of any kind, including alfalfa, clover, radish, and mung bean sprouts.
- Avoid leftovers older than 48 hours. It is important to follow proper food storage and reheating guidelines if you plan to prepare food ahead of time or save leftovers.

3. Shopping

- Don't buy canned foods that have dents or bulges.
- Don't buy canned foods that have cracks or loose lids.
- Buy only eggs that are stored in refrigerators at the store. Open the package and check it for

broken or cracked eggs.

- Pack ready-to-eat and raw foods separately. Place raw meat, poultry, seafood, and other raw foods in plastic bags before putting them in your shopping cart.
- Pick up milk and other refrigerated foods at the end of your shopping trip. This will reduce the time these foods spend outside refrigerator.
- Check the expiration dates on food packaging. Buy and use products before this date.
- Don't sample food in stores
- Consider taking freezer bags or other cooling containers with you to grocery store to ensure that food stays cold.
- Try frozen, commercially packaged foods.

4. Food Storage

- Put away groceries immediately after shopping.
- Refrigerate or freeze food immediately after purchase.
- Store eggs and dairy products inside the refrigerator, not in the door. The temperature inside is lower than in the door.
- Avoid keeping food on counter longer than necessary.
- Do not leave dairy products and mayonnaise out of the refrigerator for more than 30–60 minutes (less on hot days).
- Do not eat food directly from long-term storage containers. This way you introduce your bacteria (from your mouth) into the container.
- Check that your refrigerator is set at 40°F (4°C) degrees or below.
- Bacteria grow best between 40 and 140 °F (4 – 60 °C) degrees.
- Set your freezer temperature to 0°F (-18°C) or below.
- Defrost food in refrigerator, in cold water, or by microwaving followed by immediate cooking. Do not defrost food on counter.
- Avoid putting hot food in refrigerator, which can cause temperature inside to rise.

5. Kitchen Maintenance

- Keep your kitchen as clean as possible during food preparation and eating. This will help prevent the spread of germs.
- Use antibacterial cleaners to clean surfaces that come into contact with food. Use cleaners that contain bleach or ammonia.
- Use disposable paper towels or clean cloths instead of reusable sponges to wipe down surfaces.
- Change kitchen towels and cloths daily.

6. Using Cutting Boards

- Use cutting boards made of thick plastic, marble, glass, or ceramic boards. These materials are nonporous, meaning they cannot absorb food or liquids. Avoid using wood or other materials with porous surfaces.
- Wash cutting boards and knives in hot soapy water before using them for the next batch of food. As an extra precaution, wash cutting boards with kitchen disinfectant. Discard boards that are worn out or difficult to clean.
- Use separate cutting boards for meat, fish and vegetables..

7. Food Preparation

- Proper hand washing is the first important step in food safety. Wash your hands with warm soapy water for 20 seconds.
- Wash your hands thoroughly
 - before preparing or eating food
 - after handling raw poultry, meat, fish or seafood

- after handling garbage
- Thoroughly rinse fresh fruit and vegetables under warm running water. Scrub or brush produce to remove excess dirt.
- Even melon, oranges, and other thick-skinned fruits that are peeled before eating should be washed to avoid introducing bacteria into fruit when cutting it.
- Wash skin and surface before cutting or peeling. Never use bleach or detergents to wash fresh fruits and vegetables.
- Remove and discard any damaged or bruised areas on fruits or vegetables.
- Use clean dishes to serve cooked food. Never reuse dish that has held raw meat or fish without properly cleaning it with soap and warm water.
- Wash cans and bottles with soap and warm water before opening.
- Separate raw meat from ready-to-eat foods. Wash your hands after handling raw meat.
- Do not thaw frozen foods at room temperature. Use only one of the following methods to thaw foods:
 - Refrigerate food 1 day before cooking.
 - Use thaw option on your microwave. Cook immediately afterwards.
- Check temperature of cooked and reheated foods with food thermometer.
- Do not eat hamburgers or other meat products that look undercooked. Cook until meat is gray and juices run clear.
- Cook fish until it is loose and flakes easily.
- Cook egg whites and yolks until they are firm.
- Cook all meats to minimum internal temperature listed in chart below.

8. Safe minimum internal temperature

FOODS	SAFE MINIMUM INTERNAL TEMPERATURE
Egg and Egg Dishes	
Eggs	Cook until yolk and white are firm
Egg dishes, Egg sauces	160° F (71° C)
Ground Meat and Meat Mixtures	
Turkey and chicken	165° F (74° C)
Beef, veal, lamb, and pork	160° F (71° C)
Fresh Beef, Veal, Lamb and Pork, well done	170° F (77° C)
Ham	
Raw or fresh	160° F (71° C)
Precooked, cured ham	140° F (60° C)
Poultry and All products	165° F (74° C)
Seafood (Fish and Shellfish)	
All (raw or fresh)	145° F (63° C)

9. Leftovers

- Leftovers must be eaten within 48 hours and reheated one time only.
- Refrigerate leftovers in shallow containers immediately after eating.
- When reheating leftovers, stir, cover, and rotate to ensure even heating.
- Reheat leftovers until they reach recommended temperature.
- Sauces, soups, and gravies should be reheated until boiling.
- Eat reheated leftovers within 1 hour of reheating.
- Avoid eating foods that were cooked more than 2 days ago.
- Avoid eating foods that have already been reheated once.
- Throw away leftovers that have been refrigerated for more than 3 days.
- Label leftovers with “use by” date so you know to dispose of uneaten contents after 48 hours.

10. Safe Drinking Water

- Never drink from lakes, rivers, streams, springs, or wells.
- If you are unsure whether your tap water is safe, check with your local health department or boil or filter water. If you think your tap water may be dangerous, drink only bottled water.

11. Eating Out

Eating out is fine while on a low-microbial diet, as long as you choose your food carefully. Local health departments conduct health inspections to ensure that establishments are clean and that food is prepared properly. You can also ask the restaurant or cafe about their food safety training. When eating out, follow these guidelines:

- When ordering, ask for all food to be cooked thoroughly and for meat to be well-done.
- Avoid ordering items that may contain raw eggs (e.g. Caesar salad dressing and hollandaise sauce).
- Check with your waiter if you are unsure about the ingredients in your food.
- Avoid buffets and salad bars.
- Ask for your food to be freshly prepared and not served from a bain-marie or held under heat lamps.
- Ask for condiments to be served in single-use containers, such as ketchup and mustard packets. Open containers are used by everyone.
- Avoid soft-serve ice cream and soft-serve frozen yogurt. Dispensers may not be cleaned regularly.
- Always order a whole or individual pizza. Avoid ordering individual slices as these are often held under heat lamps.

12. Some tips

- When you go out, you may want to pack snacks ahead of time, such as protein bars, packaged roasted nuts, and packaged crackers. Take along canned soda, seltzer, or juice too.
- Make sure that you have good supply of containers for storing food.
- Purchase food thermometer to ensure that food is cooked to safe temperature. This includes whole or ground meats as well as mixed dishes, such as casseroles. Do not rely on color of meat to ensure doneness.

13. List of recommendations by food groups

If you are recommended to follow the sterile version of a low-microbial diet for period of time, consider the notes contained in the sections on dairy products and eggs. The sterile version has additional restrictions related to the range and method of preparation of these products only.

FOOD GROUPS	INCLUDE	AVOID
Breads and Grains	<p>With the sterile version only:</p> <ul style="list-style-type: none"> • Products made from flour, bran or whole grains, prepared without use of yeast and/or dairy products (in particular whey). • Cereal porridges (without addition of non-sterilized dairy products) • Pasta (without addition of non-sterilized dairy products) <p>With low microbial diet also:</p> <ul style="list-style-type: none"> • All breads, rolls, bagels, English muffins, waffles, French toast, muffins, pancakes, and sweet rolls • Potato chips, corn chips, tortilla chips, popcorn, and pretzels • Any cooked or ready-to-eat cereal purchased prepackaged from store • Rice, pasta, and other cooked grains 	<ul style="list-style-type: none"> • Foods with raw (not cooked or baked) grains (such as raw corn or raw oats) • Undercooked or raw brewer's yeast
Desserts	<p>With the sterile version only:</p> <ul style="list-style-type: none"> • Packaged candy and gum <p>With low microbial diet also:</p> <ul style="list-style-type: none"> • Refrigerated, commercially made, and homemade cakes, pies, pastries, and puddings • Refrigerated cream-filled pastries • Commercially packaged and homemade cookies • Shelf-stable cream-filled cupcakes and fruit pies • Commercially packaged ice cream and frozen yogurt • Packaged candy and gum 	<ul style="list-style-type: none"> • Unrefrigerated cream-filled pastry products that are not shelf stable • Soft-serve ice cream and frozen yogurt • Ice cream scooped at restaurant • Unpackaged after-dinner mints

FOOD GROUPS	INCLUDE	AVOID
Milk and Dairy Products	<p>With the sterile version only:</p> <ul style="list-style-type: none"> • Sterilized (ultra-pasteurized) milk and any products prepared from such milk. Moreover, preparation process must ensure preservation of sterility. • Sterilized in industrial conditions, ready-to-use and liquid concentrated food for infants <p>With low microbial diet also:</p> <ul style="list-style-type: none"> • Commercially available pasteurized milk and milk products, such as sour cream and whipped cream • Commercially pasteurized yogurts, including those made with live cultures • Commercially packaged processed cheese slices and spreads, cream cheese, cottage cheese, and ricotta cheese • Commercially packaged pasteurized cheese, such as American, cheddar, mozzarella, Monterey jack, Swiss, and Parmesan • Soft cheeses clearly labeled “made from pasteurized milk,” including goat cheese and feta • Commercially packaged ice cream, frozen yogurt, sherbet, popsicles, ice cream bars, and puddings, as well as fresh homemade milkshakes • Commercially sterile, ready-to-feed, and liquid concentrate infant formula 	<ul style="list-style-type: none"> • Raw milk • Homemade eggnog and yogurt • Cheese made from unpasteurized milk, often including soft cheeses, such as Brie, farmer’s cheese, Camembert, Mexican-style cheese (such as queso blanco and queso fresco), goat cheese, and mozzarella made with unpasteurized milk (safe if cooked until melted) • Mold-ripened cheeses, such as Roquefort, Stilton, Gorgonzola, and blue cheese • Rind on cheeses, such as Brie, as it often contains mold • Soft-serve ice cream and frozen yogurt • Unrefrigerated cream-filled pastry products that are not shelf stable • Fermented dairy products, such as kefir • Cheese sliced at deli counter • Cheese that contains chili peppers or other uncooked vegetables

FOOD GROUPS	INCLUDE	AVOID
Egg Products	<p>With the sterile version only:</p> <ul style="list-style-type: none"> Well-cooked eggs (firm white and yolk) <p>With low microbial diet also:</p> <ul style="list-style-type: none"> Pasteurized egg substitutes (such as Egg Beaters®, powdered eggs, or liquid egg whites) Runny or well-cooked pasteurized eggs, such as Davidson’s Safest Choice® Pasteurized Eggs 	<ul style="list-style-type: none"> Undercooked unpasteurized eggs and egg products Raw eggs and foods containing raw eggs, such as homemade Caesar dressing, freshly made mayonnaise and aioli, and raw cookie dough
Fish and seafood	<ul style="list-style-type: none"> Thoroughly cooked fresh fish and seafood, such as salmon, tilapia, cod, shrimp, lobster, and crab (take extra caution with shellfish that’s in shell, such as lobster, and be sure to cook it fully through until it’s opaque) Canned fish (tuna and salmon) and shelf-stable smoked fish 	<ul style="list-style-type: none"> Raw or partially cooked fish and shellfish, including caviar, sashimi, sushi, ceviche, “lemon-cooked” fish, and cured fish All clams, mussels, and oysters (raw or cooked) Smoked seafood, such as salmon or trout labeled as “nova style,” “lox,” “kippered,” or “jerky” (unless cooked to 160 F (70 C) degree or incorporated in cooked dish or casserole)
Meat and Meat Substitutes	<ul style="list-style-type: none"> Well-cooked fresh meat (pork, beef, and lamb), poultry, bacon, and sausage Commercially prepared hot dogs and sliced deli meat sold in sealed package (such as salami, bologna, ham, and turkey) that are cooked until steaming hot. Canned meats and commercially packaged beef or turkey jerky Cooked tofu or pasteurized or shelf-stable tofu Cooked fermented products, including miso and tempeh 	<ul style="list-style-type: none"> Undercooked or raw meats and poultry, including rare or medium-rare items Uncooked or raw tempeh, miso products, and tofu Freshly sliced deli meats and meats from street vendors Refrigerated pâtés and meat spreads Hard-cured salami in natural casing

FOOD GROUPS	INCLUDE	AVOID
Fruits and Vegetables	<ul style="list-style-type: none"> • Well-washed raw fresh fruits and vegetables without cuts, bruises, or mold, such as apples, pears, peaches, peppers, salad greens, carrots, cucumbers, and tomatoes • Well-washed and peeled thick-skinned fresh fruits and vegetables, such as citrus fruits, bananas, avocados, mangos, and melons • Cooked and canned fruits and vegetables • Well-washed frozen fruits and vegetables • Pasteurized juices and frozen concentrates • Commercially packaged dried fruits • Shelf-stable bottled salsa (refrigerate after opening) • Fresh, well-washed herbs • Dried herbs and spices 	<ul style="list-style-type: none"> • Unwashed raw or frozen fruits, vegetables, and herbs • Any raw or frozen rough-textured fruits and vegetables that can't be thoroughly washed, such as strawberries, raspberries, blackberries, broccoli, and cauliflower (OK if cooked) • Precut fresh fruits and vegetables, such as precut melon • Unpasteurized and fresh-squeezed fruit and vegetable juices (unless prepared at home) • Fresh fruit or vegetable salsa found in grocery refrigerated case • Vegetarian sushi, unless it's homemade, because it may be prepared near raw fish • All uncooked vegetable sprouts, including alfalfa, bean, and clover sprouts • Salads from delis or salad bars
Nuts and dried fruits	<ul style="list-style-type: none"> • Nuts, shelled seeds and dried fruits in sterile factory packaging • Nut butters in sterile factory packaging 	<ul style="list-style-type: none"> • Unpasteurized raw nuts • Nuts, seeds and dried fruits sold loose or in non-sterilized factory packaging • Unshelled seeds in any form • Roasted nuts in shell, such as pistachios or peanuts in shell • Homemade nut butters • Freshly ground peanut butter or nut butters (not commercially packaged)

FOOD GROUPS	INCLUDE	AVOID
Beverages	<p>With the sterile version only:</p> <ul style="list-style-type: none"> • Boiled water • Industrially bottled drinking water • Sterilized fruit and vegetable juices • Sterilized soy milk • Beverages in bottles, cans or in the powder form • Teas brewed with boiling water, packaged in bags in industrial conditions <p>With low microbial diet also:</p> <ul style="list-style-type: none"> • Tap water and ice, if your water is from city water supply or municipal well serving highly populated area • Water from private wells or small community wells only if well is tested daily for bacteria; if well isn't tested daily, boil water before using it • Commercially bottled distilled, spring, and natural waters • Pasteurized fruit and vegetable juices • Bottled, canned, or powdered beverages • Hot coffee • Hot teas using commercially packaged tea bags • Homemade iced tea and iced coffee made from hot (boiling) brewed tea or coffee, as long as you store it in refrigerator and drink it within two days • Pasteurized soy milk and other nondairy milks, such as almond, rice, and coconut milk • Commercially made liquid nutritional supplements, such as Ensure® and Boost® 	<ul style="list-style-type: none"> • Unpasteurized eggnog, cider, and fruit or vegetable juices • Unpasteurized beer (such as microbrewery beers and those that aren't shelf stable) and wine* • Fountain soda and other fountain beverages • Tea made with loose leaves, cold-brewed tea, sun tea, kombucha, and mate tea • Iced or cold-brewed coffee or tea from restaurants or coffee shops <p>* Talk with your doctor before consuming any alcoholic beverages.</p>

FOOD GROUPS	INCLUDE	AVOID
Condiments and Miscellaneous	<ul style="list-style-type: none"> • Salt and sugar • Jellies, syrup, and jams (refrigerate after opening) • Pasteurized or flash-pasteurized honey • Packaged ground black pepper, herbs, and spices • Ketchup, mustard, barbecue sauce, and soy sauce (refrigerate after opening) • Pickles, pickle relish, and olives (refrigerate after opening) • Vinegar • Vegetable oils and shortening • Refrigerated margarine and butter • Commercially made, shelf-stable mayonnaise and salad dressings, including Caesar, blue cheese, and other cheese-based salad dressings (refrigerate after opening) • Cooked gravy and sauces • Commercially packaged roasted nuts • Commercially packaged raw almonds or hazelnuts (required by law to be pasteurized), or other raw nuts labeled “pasteurized” • Nuts in commercially packaged or homemade baked goods • Commercially packaged nut butters and nut-free butters, such as peanut, sunflower, and soybean 	<ul style="list-style-type: none"> • Raw or unpasteurized honey and honeycomb • Whole or fresh ground black pepper served tableside at restaurants • Shared condiment containers at restaurants (ask for individual packets) • Fresh salad dressings (stored in grocery refrigerated case) containing raw eggs or cheeses, such as Caesar salad dressing • Herbal and nutritional supplements
Eating Out	<ul style="list-style-type: none"> • All foods preferred in the previous points should be in close proximity to grills or ovens, not on a marshmallow or after being stored under heat lamps (e.g. freshly cooked pizza or hamburger straight from the grill). 	<ul style="list-style-type: none"> • Buffets • Potlucks • Food from street vendors.

Based on

<https://www.mskcc.org/experience/patient-support/nutrition-cancer/diet-plans-cancer/neutropenic-diet>

and additionally

<https://patient.uwhealth.org/education/low-microbial-diet#hero>

<https://www.parkwaycancercentre.com/sg/news-events/news-articles/news-articles-details/safeguarding-health-with-a-low-microbial-diet>



Mikhail Peslyak, Health-coach.

Web: <https://psorias.info/ru>

E-mail: psorias.info@gmail.com