



### NEUTROPENIC DIET

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#### Introduction

Neutropenia is a condition characterized by a low amount of neutrophils, the white blood cells responsible for fighting off infection. Due to a low neutrophil count, a person's immune system weakens, thus compromising his or her ability to fight off infection. Those with neutropenia must follow a neutropenic, or low-microbial diet. This diet consists of avoiding foods that potentially carry high amounts of bacteria. Cooking foods completely makes sure that all bacteria are destroyed.

#### Aim

The aim of neutropenic diet is to protect from bacteria and other harmful organisms found in some food and drinks. Some foods and drink contain infection causing microbes which can be harmful to patients with a low immune system.

#### Principles of neutropenic diet

Avoid foods that increase the risk of infection by  
Storing food safely.  
Having good food hygiene.  
Eating foods within their shelf life.

#### Indications for neutropenic diet

Before and after certain types of chemotherapy and other cancer treatment.

Absolute neutrophil count (ANC) can help determine the body's ability to fight off infection. When the ANC is less than 500 cells/mm<sup>3</sup>, the patient is often instructed to follow a neutropenic diet. Patients undergoing autologous stem cell transplants typically follow this diet during the pre-transplant chemotherapy and for the first 3 or more months after transplant and continue on it until they no longer take immunosuppressive drugs. People who have had an organ transplant or who are being treated for HIV/AIDS also may need to follow this diet.

#### General advice on food safety

- 1Wash your hands thoroughly.
- 2 Before preparing or eating food.
- 3 After preparing raw poultry, meat, fish, or seafood
- 4 After handling garbage.
- 5 Thoroughly rinse fresh fruits and vegetables under running tap water.
- 6 Rinse the skins and rinds before cutting or peeling.
- 7 Rub firm skinned fruits and vegetables under running warm tap water or scrub them with a clean vegetables brush while rinsing with running tap water.
- 8 Remove and throw away any damaged or bruised areas on fruits or vegetables.
- 9Cook all foods thoroughly.

10Separate raw meats from ready to eat foods.

11Thaw foods by using one of the following methods:

12Place the food item in the refrigerator 1 day before cooking.

13Use the defrost setting on a microwave. Cook right away.

14Keep the refrigerator at a temperature of 33°F to 40°F (0.6° C to 4.4° C )

15Keep the freezer at a temperature of 0°F (-17.8° C ) or below.

16 Use a food thermometer to check the internal temperature of cooked and reheated foods.

#### Buying foods that are safe to eat

Avoid buying food with damaged or broken packing.




Avoid foods from fridges or freezer that are overloaded as the food may not be cold enough.





Buy foods in small, individual packets.





Avoid large packets that will be kept open for longer duration as this can increase the chance of bacteria contaminating them.

Always check use by dates on packaging.

Avoid shops where raw and cooked meats are stored in the same fridge

Food group	Foods to choose	Foods to avoid
<b>Beverages</b> 	<ul style="list-style-type: none"> <li>▪ Instant and brewed decaf or regular coffee and tea</li> <li>▪ Individual cans or bottles of carbonated beverages</li> <li>▪ Tap, bottled and distilled water</li> <li>▪ Ice made with tap water</li> <li>▪ Brewed herbal teas</li> <li>▪ All canned, bottled and powdered beverages and sports.</li> </ul>	Cold brewed tea or sun tea.
<b>Starches</b> including breads, crackers, cereal & potatoes 	<ul style="list-style-type: none"> <li>▪ All types of bread rolls, English muffins, fruit muffins, bagels, sweet rolls, donuts.</li> <li>▪ Waffles</li> <li>▪ French toast, pancakes</li> <li>▪ Potato chips, corn chips, pretzels, popcorn, crackers.</li> <li>▪ All types of cooked and ready to eat cereals.</li> <li>▪ Cooked grains, rice, and pasta, such as noodles, macaroni, and spaghetti.</li> <li>▪ Cooked white or sweet potatoes and yams, French fries, tater tots, hash browns, etc</li> </ul>	<ul style="list-style-type: none"> <li>▪ Breads and rolls with raw nuts</li> <li>▪ Cereals containing raw nuts</li> <li>▪ Raw oats</li> <li>▪ Uncooked pasta, pasta salad, or potato salad with raw vegetables or egg.</li> </ul>
<b>Dairy Products</b> 	<ul style="list-style-type: none"> <li>▪ Pasteurized milk; fat free milk, 2% milk, whole milk, butter milk or chocolate milk.</li> <li>▪ Sour cream</li> <li>▪ Milk shakes using individual cartons of ice cream and milk, or home made milk shakes.</li> <li>▪ Commercial eggnog</li> <li>▪ Commercial supplements such as instant breakfast drinks, liquids and powdered drinks.</li> <li>▪ Commercial frozen milkshakes.</li> <li>▪ Refrigerated and frozen pasteurized whipped topping.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Un Pasteurized milk or yogurt.</li> <li>▪ Milkshakes made with non commercial ice creams or made in a blender.</li> <li>▪ Yogurts or soft ice creams from a machine.</li> <li>▪ Eggnog made with raw eggs.</li> <li>▪ Yogurts and yogurts products</li> </ul>
		made with live and activate cultures.

<p><b>Cheese</b></p> 	<ul style="list-style-type: none"> <li>▪ Commercially packaged cheese</li> <li>▪ Processed cheese</li> </ul>	<ul style="list-style-type: none"> <li>▪ Unpasteurized and raw milk cheese.</li> <li>▪ Cheese with molds (for examples, blue, Gorgonzola, and stilton cheeses)</li> <li>▪ Soft cheeses( for examples, Brie, Camembert, Feta, Famer cheese).</li> <li>▪ Cheese containing uncooked vegetables.</li> <li>▪ Mexican-style cheeses, such as queso fresco and queso blanco.</li> </ul>
<p><b>Desserts &amp; Other Sweets</b></p> 	<ul style="list-style-type: none"> <li>▪ Cakes, pies, and cookies.</li> <li>▪ Baked custard, pudding, and gelatin.</li> <li>▪ Commercial ice cream, sherbet, fruit ice, and popsicles.</li> <li>▪ Refrigerated cream- filled pastries and desserts.</li> <li>▪ Candy, including chocolate.</li> <li>▪ Pasteurized honey and syrup.</li> <li>▪ Chewing gum.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Cakes with raw nuts.</li> <li>▪ Raw, unbaked cookies dough.</li> <li>▪ Soft ice cream or yogurt from a machine.</li> <li>▪ Non commercial or homemade ice cream or sherbet.</li> <li>▪ Cream filled pastries that are not refrigerated.</li> <li>▪ Candy with raw</li> </ul>
<p><b>Fats</b></p> 	<ul style="list-style-type: none"> <li>▪ Butter or margarine.</li> <li>▪ Cream cheese, sour cream, salad dressings, or mayonnaise.</li> <li>▪ Oil-all types.</li> <li>▪ Shortening used in cooking.</li> <li>▪ Non- dairy creamers.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Avocado dressing.</li> <li>▪ Fresh salad dressing containing aged cheese, raw eggs or fresh herbs.</li> </ul>
<p><b>Fruits &amp; Fruit Juices</b></p> 	<ul style="list-style-type: none"> <li>▪ Canned fruits and juices.</li> <li>▪ Pasteurized frozen juices.</li> <li>▪ Pasteurized cider and apple juice</li> <li>▪ Thick skinned fruits such as raw bananas, grapefruit, and oranges that are washed in cold water, and peeled by a nurse or family member</li> <li>▪ Frozen fruits</li> <li>▪ Dried fruits</li> </ul>	<ul style="list-style-type: none"> <li>▪ All fresh fruits except those listed in the Foods to Choose column</li> <li>▪ Unwashed raw fruit</li> <li>▪ Unpasteurized fruit juices</li> </ul>

<b>Meat</b> includes fish, poultry, dried beans, eggs, meat substitutes, and soups 	<ul style="list-style-type: none"> <li>Well cooked meats, beef, lamb, pork and pork products, poultry, game, fish, shellfish, hot dogs, sausage, bacon</li> <li>Canned tuna or chicken (with no raw vegetables)</li> <li>Cooked baked beans and all other cooked legumes, dried beans, casseroles, stews, and entrées</li> <li>Frozen entrees</li> <li>Pasteurized or cooked tofu</li> <li>Eggs, well-done</li> <li>Egg substitutes (for example, Egg Beaters) and powdered eggs</li> <li>Canned and homemade soup (heated well)</li> </ul>	<ul style="list-style-type: none"> <li>Rare or medium rare cooked meat, fish, or poultry</li> <li>Stir-fried foods</li> <li>Cold cuts from delicatessens</li> <li>Cold meat or poultry</li> <li>Fast food</li> <li>Raw eggs</li> <li>Eggs not well-cooked, such as sunny-side-up (runny yolk)</li> <li>Old soups, all miso products (paste made from fermented soya beans and barley or rice malt) such as paste and soup.</li> </ul>
<b>Vegetables</b> 	<ul style="list-style-type: none"> <li>All well cooked canned, frozen or fresh vegetables</li> <li>Canned vegetable juices</li> </ul>	<ul style="list-style-type: none"> <li>All raw vegetables</li> <li>Stir-fried vegetables</li> <li>Fresh salads</li> <li>Fresh sauerkraut</li> </ul>
<b>Miscellaneous</b> 	<ul style="list-style-type: none"> <li>Individual packages of salt, sugar, and pepper used after cooking</li> <li>All other herbs or seasonings added during cooking</li> <li>Low sodium seasoning added during cooking</li> <li>Gravy and cream sauce</li> <li>Commercial peanut butter, Jam and jelly</li> <li>Commercial pickles processed in jars or cans</li> <li>Lactaid drops</li> <li>Canned or bottled roasted nuts</li> <li>Nuts in baked goods</li> <li>Shelled, roasted nuts</li> </ul>	<ul style="list-style-type: none"> <li>Spices, herbs, or seasonings added to foods after cooking (except for allowed items)</li> <li>Uncanned or home-canned pickles and kosher pickles</li> <li>Freshly-made peanut butter</li> <li>Raw nuts</li> <li>Roasted nuts in shell</li> </ul>
<b>Dietary Supplements</b> 	<ul style="list-style-type: none"> <li>Commercial high-calorie/high-protein drinks, puddings, and snack bars if approved by a doctor or nurse</li> </ul>	<ul style="list-style-type: none"> <li>Supplements and vitamins (unless approved by a doctor or nurse)</li> </ul>

## **Sample Diet**

### **Breakfast**

1- Large egg scrambled  
Medium biscuit with 1tsp butter and 1 tsp Jelly  
1/2 cup apple juice  
1/2 cup 2% milk  
Coffee or tea

### **Morning snack**

1cup dry cereal  
1 cup 2% milk  
2 Tbsp dried fruit

### **Lunch**

Baked Meat loaf/ gravy 1

### **Evening Snack**

Slice pound cake with whip topping  
1/2 cooked corn  
1/2 cup canned peaches  
Slice wheat bread  
Butter or margarine  
Coffee or tea  
1 cup 2% milk

### **Afternoon snack**

1 cup of milkshake or high protein drink

### **Dinner**

3 ounces Baked or Roasted Chicken  
1/2 cup oven fried potatoes  
1/2 cup glazed carrots  
Dinner roll with butter or margarine  
1/2 cup fruit cocktail  
Coffee or tea

## **Conclusion**

Immunocompromised patients should avoid all unnecessary risk for potentially life threatening infections. Therefore consensus of advice remains valuable to avoid unnecessary and impractical restrictions being recommended in this patient group. Ensuring a consistent and sensible approach to the dietary advice given during neutropenia should help minimize both the risk of food borne infection and worsening malnutrition at a time when nutritional intake can be severely compromised.

### **Nurses role in neutropenic diet**

1 The nurse will perform hand hygiene before and after patient contact.

2 Wash hands with warm, soapy water for 20sec before and after making food and eating.

3 The nurse will assess patient's family, friends, and other hospital staff understanding of hand hygiene and personal protective equipment usage.

4 Advices the patient about avoid sharing foods with anyone.

5 Don't share any personal eating utensils like drinking cup or forks.

6 Keep house holding surface should be clean.

7 Instruct the patient to follow the dietary restriction.

## **References:**

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