NUTRITION CARE *for Breast Cancer Patients*

NATIONAL BREAST CANCER FOUNDATION, INC.®

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INTRODUCTION

Both cancer and its treatment put a lot of stress on your body, but good nutrition provides the fuel necessary to help you heal. This guide will help you understand how to create a healthy diet as well as provide tips for managing treatment induced side effects with food. Nutrition also provides a way for caretakers to take part in the treatment process by being involved in the preparation of meals as well as gathering together at the table. The goal of this eBook is to help you build a strong foundation in nutrition both for your battle with cancer and for the rest of your life.

We encourage all families to stay safe during the COVID-19 pandemic. This eBook provides information that may inspire you to visit the grocery store and stock up on healthier food choices. If you're at an increased risk, explore no contact deliveries or shop for healthy items online.

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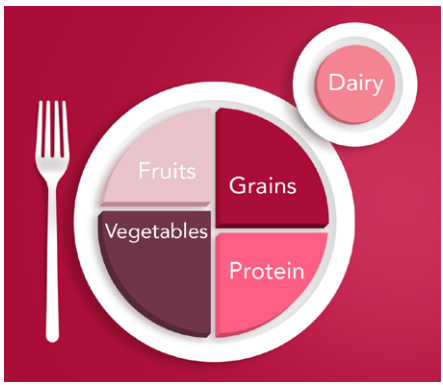
Nutrition 101

Understanding the fundamentals of nutrition can help you to create a diet that is not only healthy, but also sustainable. The nutrition guidelines covered here are things that you can apply to your life before, during, and long after you face cancer to optimize your health.

MyPlate

The current nutrition guidelines created by the USDA are called MyPlate. One of the great things about MyPlate is that it gives a clear image of how to build a healthy, balanced meal that contains all of the different food groups. For example, you should focus on making half of your plate fruits and vegetables, and only one-fourth grains and one-fourth protein. Dairy is also important to include in your diet to ensure that you are getting enough calcium to support your bones. Let's take a closer look at each of these food groups and how to use them to create a healthy diet.



Fruit:

The average adult should consume anywhere from **1 to 2 cups of fruit daily.**[1] While it is best to focus on consuming whole, fresh fruit, there are also a variety of other options such as frozen, canned, dried, 100% fruit juice, and more that are great options if fresh is not available.

Vegetables:

Like fruit, fresh vegetables are best, but there are many other options as well. You should focus on including a variety of different vegetables such as dark-leafy greens, red and orange vegetables (like bell peppers), starchy vegetables like sweet potatoes, and legumes (beans and peas). Aim to get **at least 1 to 3 cups of vegetables per day**.[2]

Grains:

Perhaps the most important thing to remember about grains is to **make half of your grains whole**.[3] When grains are processed, different parts of the grain, such as the bran or germ, are removed. As a result, refined grains are lower in several nutrients (especially fiber, iron, and B vitamins)[3] compared to whole grains. The easiest way to determine if a grain product is whole or not is to look at the ingredient list, *NOT* the front of the product. Sadly, companies are able to advertise a product as "Whole Grain" or "Whole Wheat" even if the main ingredient is a refined one. In the ingredient list, the first ingredient listed should say "**whole wheat**", "**whole grain**", or a food that is not refined such as **oats, oatmeal, or brown rice.** Below are some of the terms that indicate it is a **refined grain:**[4]

- Enriched
- Fortified
- Bran
- Wheat flour
- Wheat germ

Protein:

Cancer patients have higher protein needs compared to the average individual in order to support the healing and repair of tissues following treatments.[5] While the standard serving size for protein foods is 3 oz,[6] cancer patients may want to aim for **4 - 6 oz per serving** to meet their increased needs. High protein foods include meat,

poultry, eggs, fish, beans, seeds, nuts, and soy products. It is recommended to have seafood as your main protein source in a meal at least twice a week because fish such as salmon, tuna, trout, and herring are high in omega 3 fatty acids, which have a variety of health benefits.[7]

**Note: Your doctor may advise you to stay away from soy products such as tofu depending on your type of breast cancer because soy is actually a phytoestrogen, meaning it mimics the actions of estrogen in the body. Some studies show that this can increase your chances of recurrence, though the data is contradictory.*[8]

Dairy:

Dairy is one of the best sources of calcium, a mineral that is essential for building strong bones. This is especially important in cancer patients because cancer treatment can actually weaken your bones (more on this later). Options for dairy include milk, yogurt, and cheeses. Even plant-based milks such as almond milk count if they are fortified with calcium (look for ingredients such as calcium carbonate in the ingredient list).[9]

CHOOSING HEALTHY FATS

Different types of fat contribute to your health in different ways, which is why it is so important to be able to distinguish which types of fat you are consuming. Below are the three categories of fats found in your food and what you should know about them:

Saturated fat:

The current recommendations are to **limit your saturated fat consumption to less than 10% of your calories** (roughly 22 grams per day for the average person)[10] because it increases your LDL cholesterol (known as your "bad" cholesterol). A good way to identify saturated fats

is that they are generally solid at room temperature. Food sources high in saturated fat include:

- Fatty and processed meats
- Cheese, cream, butter, and other full-fat dairy products
- Coconut oil

Trans fat:

Trans fats are artificially made in order to increase the shelf-life of certain products. This type of fat has been found to not only increase your LDL ("bad") cholesterol, but also decrease your HDL ("good") cholesterol placing you at a higher risk for developing cardiovascular disease. The recommendation is to **completely avoid *trans* fats if possible.**[11] Food sources high in *trans* fat include:

- Margarine
- Shortening
- Some brands of coffee creamer
- Processed ("convenience") foods

Unsaturated fat:

These are the "healthy" types of fat. Unsaturated fats are great because they often provide anti-inflammatory effects (such as from Omega 3 fatty acids) and help decrease LDL ("bad") cholesterol and increase HDL ("good") cholesterol when used in place of saturated fats.[11] Food sources high in unsaturated fat include:

- Nuts and seeds
- Avocados
- Olives and olive oil
- Fatty fish (salmon, tuna)

EAT THE RAINBOW

The old adage to "eat the rainbow" is so common that it is almost cliché, but it really is true. The colors in foods are created by different compounds called pigments, and each pigment actually has their own unique health benefits. Red and orange foods such as peppers and carrots have different health benefits from green foods such as spinach and kale, which have different health benefits from white foods such as garlic and cauliflower. **One health benefit of pigments is their antioxidant potential,** which helps protect cells from damage and therefore reduce the risk for developing cancer or recurrence.[12] Consuming foods of every color assures that you are getting the most from your diet.

THE NUMBER ONE GOAL

With all of that being said, the main goal during cancer treatment is simply to eat. Obviously, if you are able to make healthier choices, that is preferred, but many cancer patients have a hard-enough time eating anything at all because of lack of appetite, nausea, and more. Later on, we will discuss some of the ways you can use food to help manage these and other side effects of your treatment, but the important thing really is that you are eating enough to maintain a healthy weight, preserve muscle mass, and avoid malnutrition.

Food Safety and Why it is Important

WHY IT MATTERS

Patients undergoing treatments such as chemotherapy have **weakened immune systems.** As a result, they are not only **more susceptible to food-borne illnesses, but also have a harder time recovering from them.** Understanding the principles behind food safety can help you protect yourself from these potentially deadly illnesses.

FOOD SAFETY TIPS

Keep a Clean Environment

One of the easiest ways to defend yourself from foodborne illnesses is to keep a clean environment around food. That means washing your hands, cooking surfaces, and cooking tools frequently (especially after handling raw meat, poultry, and seafood). Also remember to wash all fruits and vegetables before cooking or eating.

Separate Raw from Ready-To-Eat

Always make sure to keep foods that will not be cooked away from raw meats, poultry, seafood, and eggs. It is even best to use separate cutting boards and knives for different types of foods to avoid cross contamination of bacteria. Finally, arrange your refrigerator so that meats and seafood are at the bottom and fruit and vegetables are at the top. The best way to order your refrigerator from top to bottom is: ready-to-eat food, seafood, beef and pork, ground meat, whole and ground poultry.[13]

Cooking Temperatures

One of the best ways to kill bacteria in food is through cooking. Certain foods need to be cooked to specific minimum temperatures in order to ensure that the bacteria have been killed. These food-specific temperatures are listed below.[14] When checking the temperatures of food, make sure that the thermometer is in the thickest part of the meat as it takes these areas longer to get to the proper temperature.

Minimum Safe Internal Temperatures

Beef, Pork, Lamb, Veal	145°F
Seafood	145°F
Ground Meat	160°F
Poultry (Chicken, Turkey)	165°F

Chill Food

Something to keep in mind especially for leftovers is to keep food out of the temperature danger zone (41-135°F). This is the temperature range that bacteria are able to grow the most rapidly.[13] You can limit bacteria growth by placing leftovers in the refrigerator quickly after you are done with them.

Danger Zone: 41 – 135° F

Bacteria grow more rapidly within this temperature range. Try to keep your food outside of these temperatures for more than 2 hours at a time or 4 hours in total. Food that has been in the danger zone for longer periods than this should be thrown out.

HIGH-RISK FOODS

Certain foods are known to be more high-risk than others and should be avoided or eaten with caution while your immune system is compromised.[13] These foods include:

- Raw or undercooked fish, meat, and poultry
- Eggs, shellfish, and unpasteurized dairy
- Raw sprouts and lettuce
- Pre-cut tomatoes and melons

SYMPTOMS OF FOODBORNE ILLNESSES

- Diarrhea
- Nausea
- Vomiting
- Fever
- Abdominal cramps
- Jaundice (yellowing of skin and eyes)

Managing Treatment Side Effects With Nutrition

One of the hallmark traits of malignant (cancer) cells is that they are able to hijack the processes that regulate their cell cycle.[15] Because of this, cancer cells divide rapidly to produce more cells resulting in uncontrolled growth. This characteristic is exactly what is used against them in cancer treatments. Regardless of the specific type of chemotherapy or radiation, the goal behind cancer treatment is to target rapidly dividing cells, namely cancerous cells.[5] Unfortunately, there are some normal rapidly dividing cells in the body which are also affected by the cancer treatment. One of the main tissues affected is the gastrointestinal (GI) tract.

The GI tract is made up of cells with very short lifespans. As a result, these cells are constantly dividing to produce new cells to replace those that are lost.[16] When a patient undergoes chemotherapy or radiation, many of the cells along the GI tract all the way from the mouth to the gut are damaged or die off causing a variety of side effects.

Many of the side effects make it difficult or less enjoyable to eat, so patients may have reduced intake. Additionally, cancer treatments often put patients in a hypermetabolic state, meaning that they burn through nutrients at a faster rate.[17] Therefore, one of the main concerns is malnutrition. It is important to manage treatment-induced side effects not only to improve comfort and quality of life, but also to ensure that the patient is taking in a sufficient amount of nutrients to maintain a healthy weight and provide their body with the fuel needed to continue functioning at an optimal level.

Below are some of the most common side effects from cancer treatment as well as recommendations for how to manage them:

NAUSEA AND VOMITING

When dealing with nausea and vomiting, it is best to stick to foods that are **low in fat and fiber** that your body can easily digest. This is especially important on the morning of and during the first few days following treatments when the patient's stomach may be particularly sensitive.[5] Try sticking to the **BRAT diet (Bananas, Rice, Apple sauce, and Toast)** when the nausea is very severe. These foods are easy for your stomach to process and therefore are less likely to cause vomiting.

Many patients find that they are especially sensitive to smells caused by cooking, so it may be helpful to leave the room while food is being prepared or to use a microwave to minimize the smell produced.[5,17] Frying also

creates a stronger odor than other forms of cooking, and therefore may be best to avoid. Cold foods also don't have as strong of a smell as hot foods, so they may be better tolerated.

Patients who are vomiting should try to **drink beverages that contain electrolytes** in order to stay hydrated.[5] It is also advised that patients stay away from eating their favorite foods when feeling nauseous or vomiting so that they don't create an aversion towards their favorite meals or treats.

DYSGEUSIA – ALTERATION IN TASTE

Taste plays a significant role in our eating habits, and when it is altered, it can make eating much less enjoyable. One of the most common forms of dysgeusia is experiencing a metallic taste. Meats, particularly **red meats**, are especially associated with this, and therefore may be best to avoid while experiencing this alteration in taste. Patients also find it helpful to avoid metal containers and utensils to help reduce the metallic taste. Instead, try using plastic utensils and drinking from a glass rather than a can.[5]

Patients may also experience a complete loss of taste, known as ageusia, in which case it may help to focus on eating highly seasoned or marinated foods to enhance flavor. Other patients can be especially sensitive to sweet foods.[5]

Nutrition Tip

When reducing the amount of meat in your diet to help with dysgeusia, make sure to include other high protein foods so that you are still meeting your protein needs. Suggested foods include nut butters and cottage cheese. Chicken and eggs may also be more tolerable. As always, remember to follow the proper food safety guidelines discussed earlier.

XEROSTOMIA – DRY MOUTH

Having a dry mouth can not only be uncomfortable, but also make it difficult to eat. A simple way to help stimulate your salivary glands to produce more saliva is to chew on **sugar free gum or sour candies. Eating foods with sauces on them** can also help moisten food so that it is easier to swallow. In extreme cases of xerostomia, doctors may also recommend using artificial saliva.[5]

ANOREXIA – LOSS OF APPETITE

Not to be confused with the eating disorder, anorexia nervosa, anorexia is simply the loss of appetite.[5] This is a very common side effect of cancer treatment and can be dangerous because it may lead to decreased food intake.

In addition to a general loss of appetite, patients may also experience early satiety, or feeling full quicker than normal while eating.[5] One way to help deal with anorexia is to **eat smaller, more frequent meals** throughout the day. Patients struggling with reduced appetite or early satiety should also **avoid drinking fluids during meals** and instead drink between meals. High-fiber foods such as leafy greens can also increase satiety during meals and may need to be avoided in order to improve appetite.[5,17] Light exercise such as walking may also help to stimulate appetite, though it should be done very gently and dependent on how you are feeling.[5]

DIARRHEA

One of the main concerns with chronic diarrhea is dehydration.[17] If you are experiencing diarrhea, it is important that you **drink plenty of fluid with electrolytes** throughout the day to stay hydrated. To avoid creating nausea, try to get your fluids in small amounts spread throughout the day.[5]

Patients with diarrhea should also **limit the amount of high-sugar foods and beverages**, especially simple sugars, because these foods actually draw more water into your gut during digestion, worsening the diarrhea.[5] Caffeine is also known to promote bowel movements and may need to be limited if experiencing diarrhea. Unless you have a reduced appetite, you can try adding food high in soluble fibers such as oats and beans to your diet.[18] Taking probiotics may also help to regularize bowel movements.[5,17]

Foods to Avoid that Promote Diarrhea

- **Simple sugars:** Fruit juices, candy, refined grains
- **Caffeine**
- **Sugar alcohols:** Found in many sugar-free products such as chewing gum

MUCOSITIS – INFLAMED MOUTH AND THROAT

Mucositis is a condition in which the lining of the mouth, throat, or even gut become inflamed and irritated, making it painful to eat. One of the easiest things that patients can do when experiencing mucositis is to **limit foods that cause further irritation**. These include acidic, spicy, or hard, dry foods. Hot food can also be irritating. Instead, focus on soft, easy to chew foods such as bananas, mashed potatoes, scrambled eggs, gelatin, or even ice cream.[5]

Foods to Avoid with Mucositis

- Acidic foods: Tomatoes, citrus fruit, peppers
- Spicy food
- Dry, hard food: Pretzels, granola, chips
- Alcohol

Another way to help improve symptoms of mucositis is to practice good **oral hygiene** to minimize the amount of harmful bacteria in the mouth.[5,17,19] Make sure to brush your teeth regularly with a soft toothbrush and to **avoid commercial mouthwash that may be alcohol-based** as they can dry out your mouth, irritating the sores. Make sure that you are also drinking an adequate amount of water throughout the day. If the pain is still too severe to eat, ask your doctor to recommend a numbing mouth wash to use before meals.[12]

Mouth Care Tips:

- Try to brush your teeth after every meal.
- Avoid toothpastes with **hydrogen peroxide** in them. This ingredient is commonly found in whitening toothpaste and can irritate mouth sores.
- Soften your toothbrush by soaking it in hot water before brushing your teeth. If it still hurts your gums, try using a piece of gauze rather than a toothbrush to help clean your teeth.
- Floss gently at least once a day as tolerated.
- If you wear dentures or retainers, make sure to clean them thoroughly every day. It also may be best to not wear them at night and whenever you can throughout the day to reduce irritation to the gums.

OSTEOPENIA/OSTEOPOROSIS – WEAKENED BONES

In general, women have a higher risk for developing osteoporosis, or soft bones, later in life compared to men. Unfortunately, cancer treatment further increases the risk.

Estrogen is a hormone with many functions including protecting the bones. Chemotherapy can result in early-onset menopause, reducing the levels of estrogen in the body. Because of this, women who have had chemotherapy generally have increased rates of bone loss.[20] Steroid medications that are often given to breast cancer patients to help reduce inflammation can also trigger increased bone loss.[21] The net result of this is that breast cancer survivors are at higher risk for developing fractures due to weakened bones.

Maintaining a healthy diet that is high in **vitamin D and calcium** can help increase your bone density. Talk to your doctor about whether or not you may need to use supplements to help meet your needs for these nutrients. **Weight-bearing exercises** such as walking, resistance training, and yoga also help improve bone mineralization and strength. Finally, **avoid smoking or excessive drinking** as these activities are associated with increased losses of bone tissue.[20] Talk to your doctor about having bone mineral density tests to monitor your bone health and assess your risk for developing fractures.

About The Author

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Annie Cavalier is a clinical registered dietitian who works at one of the largest hospitals in Dallas, Texas. She attended the University of Texas at Austin for her bachelor's degree in nutrition and dietetics and received her master's degree in nutrition from Texas Woman's University. Annie's interest in nutrition was sparked when she was 12 years old and her mother was diagnosed with breast cancer. With the help of a friend who is a chef, Annie's family learned how to prepare healthy, delicious food that her mother was able to eat during treatment. Noticing how much of an impact food and nutrition had on overall health and wellbeing, Annie set out to learn more about the science behind food and its relationship to health.

Annie runs her own nutrition and lifestyle website, My Healthful Life, which she plans to grow into a private practice. In addition to writing articles for her own website, Annie has also written for the University of Texas Department of Kinesiology's Fitness Institute of Texas, Southern Dallas Magazine, and more. This is her second publication with the National Breast Cancer Foundation.

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My Healthful Life

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