



Managing Nutrition during Cancer

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Nutrition status affects cancer outcomes, tolerance to treatment, and quality of life. Cancer treatment can increase calorie, protein, vitamin, and mineral needs but at the same time cause side effects that make obtaining adequate nutrition difficult.

Healthy Ways to Maintain Body Weight and Muscle Mass

Maintaining a healthy weight and lean muscle mass are both important during cancer treatment. Unintentional weight loss and low muscle mass increase the risk of developing chemotherapy toxicity and can lead to intolerance of treatment. To help maintain body weight and muscle mass, try the following.

- Do not skip meals.
- Eat multiple small meals throughout the day if you can't eat much at one time.
- Liquid calories like milkshakes, smoothies, and oral nutrition supplements recommended by your doctor or dietitian can be an easy way to obtain a lot of calories with little effort.
- Include protein with each meal and snack. For example, if you choose to have toast in the morning, pair it with peanut butter and a boiled egg.



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Many people also ask about exercise during cancer treatment. Exercise during treatment is recommended and may be beneficial in increasing overall survival and quality of life. Resistance exercises use some form of weight and can help preserve muscle mass. Starting an exercise routine during treatment may be difficult, but any effort to exercise may be beneficial. If you have any concerns about nutrition or exercise, you should ask your healthcare provider.



Focus on Nutrients that Help the Body Heal

Eating a variety of fruits, vegetables, and whole grains provides the body nutrients and other chemicals that help the body heal when sick or stressed. These chemicals, called phytochemicals, are found in plants and tend to fight inflammation and may even reduce the risk of developing cancer by keeping cells in the body healthy. Many of the colors we associate with fruits and vegetables are due to phytochemicals. Common examples include the red pigment, lycopene, found in tomatoes and watermelon, and the blue and black pigments of berries called anthocyanins.

Focus on the Food Groups

A balanced diet with foods from all the food groups ensures you are receiving a wide variety of nutrients and different forms of energy. If possible, keep your diet balanced with brightly colored fruits and vegetables, whole grains, lean protein, and dairy items.

Fruits

Fruit is an easy and efficient way to add vitamins, minerals, and fiber to your diet. Try to eat one to two different colored fruits each week to ensure you are taking in a variety. When possible, purchase fruits when they are in season at their peak for taste, nutrition, and affordability. Another economic option is to keep your freezer stocked with frozen fruits to quickly add to a meal or smoothie.

Try to consume two to three servings of fruit each day. Include fruit at meals as a side dish, add fruit to your snacks, or use the sweet taste of fruit as your dessert.



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Vegetables

Increase your vitamin and mineral intake by eating a variety of vegetables each day. Like fruits, challenge yourself to eat one to two different-colored vegetables each week. Brightly colored and strong-flavored vegetables like leafy greens, beets, red cabbage, and sweet potatoes are excellent options and add bulk to your meals. In-season vegetables are going to taste the best. Canned vegetables with no salt added and frozen vegetables are healthy and economical options as well.

Try to consume four to five servings of vegetables each day. This may seem like a lot to some but think creatively about ways to add vegetables to your diet. For example, spinach and tomatoes go well in omelets for breakfast, and many vegetables serve as easy, grab-and-go snacks.

Grains

An important part of a healthy, balanced diet is whole grains. These items are made with all three parts of the grain, rather than only the white spongy part of the grain in refined carbohydrate foods. Common whole grain foods include brown rice, oatmeal, barley, and even popcorn. There are also whole grain versions of many of our favorite foods, including bread, pasta, and crackers that are comparable in price and taste to refined versions. Some studies are beginning to show that diets rich in whole grains may be linked to lower rates of colon cancer.

A common misconception is that sugar found in all foods will make cancer grow faster. All cells in our bodies (including cancer cells) require sugar to function. However, eliminating sugar in our diets will not slow cancer growth. Do not avoid naturally occurring sugar like those found in fruits, vegetables, whole grains, legumes, and dairy. As always, limit added sugars in your diet like those in sugar-sweetened beverages, candy, baked goods, and many processed foods.

Protein

Consuming enough protein is important for maintaining body weight and muscle mass. Research is starting to show us that different types of protein may have different roles in cancer prevention, management, and risk. Some cancer treatments can cause taste changes and intolerance to meat. If you are not eating meat, choose plant-based proteins like beans (black, pinto, garbanzo, etc.), nuts, seeds, tofu, tempeh, and meat-substitute products.

It is possible to consume adequate protein on a plant-based diet. This dietary pattern is also high in fruits, vegetables, and whole grains, all of which can protect against certain cancers. Plant foods are high in fiber, which can be beneficial for gut health and can reduce inflammation. Consuming a plant-based dietary pattern consistently may provide a greater protective



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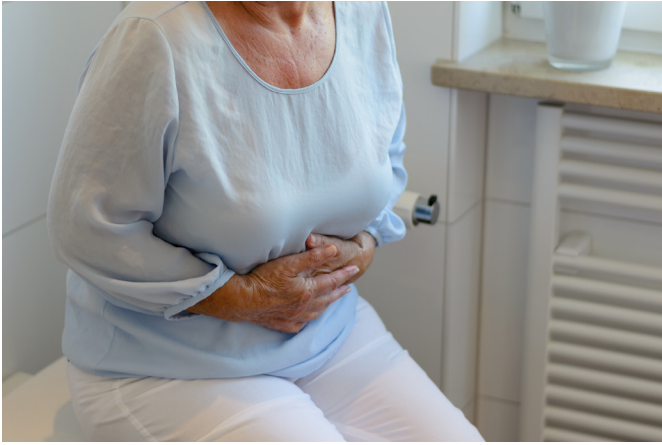
benefit than any individual foods or particular nutrients. A plant-based diet is not a vegan diet and allows for occasional animal products but primarily consists of plant foods, similar to the USDA's MyPlate guidelines.

Limit red meat and processed meats (hot dogs, lunch meat, bacon, ham) as much as possible as their high consumption has been described as a risk factor for the development of cancers such as colon cancer. Try to avoid grilled meats as cooking meat at high temperatures creates chemicals that may cause cancer.

Soy is a common type of protein found in a wide variety of foods. Soy consumption (soy milk, edamame, tofu, tempeh, etc.) is safe for people with breast cancer and may actually be beneficial for breast cancer survivors. Soy foods contain many beneficial nutrients that can help protect heart health, are high in protein and calcium, and are cholesterol-free.

Dairy

Dairy foods are a great way to ensure that you are receiving calcium, vitamin D, and protein that your body needs each day. Choosing no-fat or low-fat dairy items still provides the same amounts of those important minerals, vitamins, and protein. It is even suggested low-fat dairy foods eaten in moderation may reduce the risk



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of colorectal cancers. For those in cancer treatment, consuming full-fat dairy products is an easy way to add calories into the diet when trying to maintain body weight.

Managing Symptoms

The goal of cancer treatment is to kill cancer cells. Unfortunately, treatments often affect healthy cells as well and cause side effects like nausea, vomiting, diarrhea, and more. These side effects can make it very difficult to obtain adequate nutrition.

When someone is undergoing cancer treatment, overall consumption and enjoyment of food is prioritized over any previous dietary restrictions common with other co-existing health conditions (e.g. hypertension, diabetes). Eating five to six small meals throughout the day can make eating seem like less of a chore.

Appetite Loss

Many cancer patients experience poor appetites while undergoing cancer treatment. Some people may experience a decrease in hunger for only a couple of days while others may experience it throughout the entire duration of their treatment. Just because you aren't hungry doesn't mean that you cannot eat. To combat a poor appetite, drink oral nutrition supplements recommended by your doctor or

dietitian, shakes, and/or smoothies (see recipe below). This can be an easy way to consume a lot of calories and protein with little effort. Eating five to six small meals throughout the day can make eating seem like less of a chore. Adding things like olive oil, sour cream, peanut butter, and avocado to meals can increase the calorie content while not adding much volume to the meal.

To prevent becoming too full too quickly, consider drinking beverages in between your meals and snack times. Increasing physical activity or adding exercise into your day may increase appetite and make you feel better overall.

Nausea

Nausea is a common side effect that happens a few days after many cancer treatments. It may or may not be accompanied by vomiting. Nausea can make eating enough very difficult, but there are certain foods that are generally better tolerated when nausea is present. Smaller, more frequent meals are easier on the stomach. Avoid skipping meals as taking some medications on an empty stomach can make nausea worse. Choose bland foods like toast, broth-based soups (e.g. chicken noodle), canned fruits, yogurt, baked potatoes, cottage cheese, crackers, popsicles, chicken breast, eggs, plain noodles, and cereals. Drinking beverages through a straw may help reduce nausea. Ask your healthcare provider about anti-nausea medications.

Changes in Taste and Smell

Cancer itself and treatment may affect the way foods taste and smell. Foods and drinks can often taste bitter or metallic. Luckily, taste changes go away after treatment is finished. If you notice food doesn't taste appealing to you, try using different spices, condiments, and even adding acidic foods like lemon, lime, and vinegar to your meals. If you are experiencing a metallic

taste, avoid metal utensils and replace them with plastic. Additionally, canned foods should be avoided as they often can have a metallic taste.

If red meat doesn't taste good to you, try increasing your intake of chicken, fish, beans, nuts, eggs, and cheese to get adequate protein in your diet. If you are becoming nauseous from the smell of certain foods, try consuming cold or room temperature foods which don't smell as strongly as hot foods.

At home, if possible, avoid the kitchen while food is being prepared.

Diarrhea

Diarrhea is another common side effect of cancer treatment. Diarrhea is described as frequent watery or loose bowel movements and can cause reduced absorption of nutrients, vitamins, minerals, and water and can lead to dehydration. Adequate fluid and electrolyte intake is necessary to prevent dehydration. To help maintain hydration status, drink at least one cup of fluid after each loose bowel movement.

When possible, avoid greasy, fried foods. It also may help to eliminate gas-producing foods like raw fruits and vegetables, beans, and whole grains for a short amount of time to see if that helps relieve the symptoms. Choose lower fiber options like white rice, toast, apple sauce, canned peaches, and lean meats. You may develop a sensitivity to milk products, so avoiding milk and cheese may be beneficial; however, yogurt is typically well tolerated. Increase your potassium intake by consuming sports drinks, bananas, and potatoes. Consuming high sodium (salt) foods like broths, crackers, and pretzels may also be beneficial.

Fatigue

Cancer treatment causes many people to feel extra tired. When feeling your best, try to eat as much as possible to cover for the times when

you don't have much energy to eat. Keep your favorite snacks within reach so you can easily have something to eat when you need it. Oral nutrition supplements are easy ways to obtain nutrition and don't involve chewing, which can be surprisingly difficult when fatigued. Set alarms every few hours to remind yourself to eat something. If you have a support system, take them up on their offers to prepare meals for you. Frozen meals are a convenient and quick way to eat a good meal with little energy required.

Preparing Safe Meals for Yourself or a Loved One

When preparing meals for yourself or a loved one, food safety is always an important consideration. Cancer treatments can sometimes decrease the activity of your immune system, increasing your risk for foodborne illness. Germs can get into food during processing, storing, and preparation. You cannot always tell if food is bad by the way it looks, tastes, or smells. To prevent becoming sick from the food you eat, appropriate food safety is necessary. According to the United States Department of Agriculture, there are four basic steps to good food safety: cleaning, separating, cooking, and chilling foods appropriately. For more information about food safety measures, ask your County Extension agent.

In addition, do not eat anything that contains mold or that is expired. Avoid buffets and salad bars as many people are touching the food, temperatures aren't always accurately controlled, and the food is often left out too long. Do not eat any cheeses, milk, or juices that aren't pasteurized. And avoid pre-cut produce at the grocery store if possible, because they are commonly associated with recalls.



Matt Barton, University of Kentucky

High-Calorie Liquid Shake

As mentioned, liquid shakes and smoothies are easy ways to obtain nutrition and a lot of calories at once for those who need to maintain or gain weight. Homemade versions are easy to make if store-bought oral nutrition supplements are no longer appealing. Use the base Wellness Shake Recipe below and use the suggested variations to mix things up!

Wellness Shake Recipe

1 cup of whole milk (or a high calorie plant milk like soy or oat if lactose-intolerant; note almond milk is low in calories)

2 tablespoons of nut butter (peanut, almond, or cashew)

1 banana

½ cup fruit, fresh or frozen (strawberries, peaches, etc.)

¼ cup mango sorbet

Nutrient analysis: 550 calories, 26 g fat, 6 g saturated fat, 0 g trans fat, 24 mg cholesterol, 115 mg sodium, 72 g carbohydrate, 9 g fiber, 46 g sugar, 16 g protein

Optional extras for more calories (choose one):

- Maple syrup (50 calories per tablespoon)
- Coconut or flaxseed oil (120 calories per tablespoon)
- Avocado (225 calories each)
- Canned coconut milk (220 calories per ½ cup)
- Ice cream (240 calories per ½ cup)

Questions to Ask Your Registered Dietitian or Healthcare Providers

Being able to talk with the cancer care team about concerns may help you feel more comfortable. They may be able to refer you to a registered dietitian. Following are some good questions to ask:

- Can you refer me or help me set up an appointment with a registered dietitian?
- Should I be taking supplements?
- Can you help me with unintentional weight loss?
- I have a general disinterest in food and nothing tastes the same. Will this be my new normal?

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