

## Nutrition Habits That Make a Difference for Neuroendocrine Cancer Survivors

Healthy habits including good nutrition may lower the risk of cancer progression and recurrence. Eating a healthy diet also lowers your risk for other long-term diseases, such as heart disease, high blood pressure, diabetes, osteoporosis, and obesity. Practicing a healthy lifestyle through proper diet and exercise can help improve quality of life during and after cancer treatment. As you go through different phases of your cancer diagnosis and treatment your nutritional requirements and goals may change. These recommendations can serve as a general guide that can then be modified to meet your individual needs.

### American Institute for Cancer Research's Guidelines for Cancer Survivors

#### Recommendations to Reduce Your Cancer Risk

1. Be as lean as possible without becoming underweight.
2. Be physically active for at least 30 minutes every day.
3. Avoid sugary drinks, and limit consumption of energy-dense foods (particularly processed foods high in added sugar, low in fiber or high in fat).
4. Eat more of a variety of vegetables, fruits, whole grains and legumes such as beans.
5. Limit consumption of red meats (such as beef, pork and lamb) and avoid processed meats.
6. If consumed at all, limit alcoholic drinks to two for men and one for women a day.
7. Limit consumption of salty foods and foods processed with salt (sodium).
8. Do not rely on supplements to protect against cancer.

And always remember – do not smoke or chew tobacco.

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### Basics of a Healthy Diet and Lifestyle

#### Eat a plant-based diet that includes a variety of colorful fruits and vegetables.

- Aim to eat 2 ½ cups or more of vegetables daily.
- At each meal, cover at least two-thirds of your plate with plant foods like vegetables, fruits, whole grains or beans.
- Use herbs and spices to season foods in place of salt, added fats and sugars. Turmeric, the yellow spice found in curry and mustard, may be particularly beneficial due to its anti-inflammatory properties.
- Including 4+ colors per day will help maximize the phytochemical content of your diet. Phytochemicals are natural compounds that promote health via anti-inflammatory, anti-oxidant, and immune boosting actions. Think of the red, orange, yellow, green, blue, red-purple, brown, and white colored plant foods as your “Nutrition Rainbow”.

Phytochemicals		
Phytochemical(s)	Plant Source	Possible Benefits
Carotenoids (such as beta-carotene, lycopene, lutein, zeaxanthin)	Red, orange and green fruits and vegetables including broccoli, carrots, cooked tomatoes, leafy greens, sweet potatoes, winter squash, apricots, cantaloupe, oranges and watermelon	May inhibit cancer cell growth, work as antioxidants and improve immune response
Flavonoids (such as anthocyanins and quercetin)	Apples, citrus fruits, onions, soybeans and soy products (tofu, soy milk, edamame, etc.), coffee and tea	May inhibit inflammation and tumor growth; may aid immunity and boost production of detoxifying enzymes in the body
Indoles and Glucosinolates (sulforaphane)	Cruciferous vegetables (broccoli, cabbage, collard greens, kale, cauliflower and Brussels sprouts)	May induce detoxification of carcinogens, limit production of cancer-related hormones, block carcinogens and prevent tumor growth
Inositol (phytic acid)	Bran from corn, oats, rice, rye and wheat, nuts, soybeans and soy products (tofu, soy milk, edamame, etc.)	May retard cell growth and work as antioxidant
Isoflavones (daidzein and genistein)	Soybeans and soy products (tofu, soy milk, edamame, etc.)	May inhibit tumor growth, limit production of cancer-related hormones and generally work as antioxidant
Isothiocyanates	Cruciferous vegetables (broccoli, cabbage, collard greens, kale, cauliflower and Brussels sprouts)	May induce detoxification of carcinogens, block tumor growth and work as antioxidants
Polyphenols (such as ellagic acid and resveratrol)	Green tea, grapes, wine, berries, citrus fruits, apples, whole grains and peanuts	May prevent cancer formation, prevent inflammation and work as antioxidants
Terpenes (such as perillyl alcohol, limonene, carnosol)	Cherries, citrus fruit peel, rosemary	May protect cells from becoming cancerous, slow cancer cell growth, strengthen immune function, limit production of cancer-related hormones, fight viruses, work as antioxidants

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- Organic vegetables and fruits tend to have higher levels of phytochemicals than non-organically grown ones. Whenever possible buy organic fruits and vegetables, especially those found to contain the highest amounts of pesticide residues (see list below). Overall it is most important to eat a variety and an abundance of fruits and vegetables, than it is to eat organic.

**Fruits & Vegetables: 2017 Pesticide Residue Lists**

<b><u>Greatest Pesticide Residue</u></b>	<b><u>Least Pesticide Residue</u></b>
<i>Buy these organic whenever possible</i>	Sweet Corn
Strawberries	Avocados
Spinach	Pineapples
Nectarines	Cabbage
Apples	Onions
Peaches	Sweet Peas
Pears	Papayas
Cherries	Asparagus
Grapes	Mangoes
Celery	Eggplant
Tomatoes	Honeydew Melon
Sweet Bell Peppers	Kiwi
Potatoes	Cantaloupe
	Cauliflower
	Grapefruit
<i>Reference <a href="http://www.ewg.org">http://www.ewg.org</a></i>	

- Plant-based foods are naturally rich in dietary fiber. Fiber is important for cancer risk reduction and overall health as it helps manage weight, control blood sugar and cholesterol levels, promotes bowel regularity, and provides prebiotics.
  - Prebiotics are compounds found in plant foods that provide nutrition to the good bacteria in our guts. Gut bacteria, also known as the gut microbiome, play many important roles in our health. Foods that are particularly rich sources of prebiotics include chicory root, Jerusalem artichokes, onions, garlic, leeks, dandelion greens, asparagus, bananas, whole wheat, barley, legumes (lentils, beans, soybeans, peas), and flaxseeds.

**Opt for whole grains in place of foods made from refined grains such as white bread, pastas and white rice.**

- Whole grains are cereal grains that contain the germ, endosperm, and bran, in contrast to refined grains, which after processing retain only the starchy endosperm. The germ and the bran are the parts of the grain that contain most of the vitamins, minerals, fiber and phytochemicals.
- Whole grain examples include amaranth, barley, brown rice, buckwheat (kasha), millet, oats, popcorn, quinoa, rye, triticale, wheat (berries, bulgur, cracked, flakes).
- One serving of whole grain = 1 small slice of bread, ½ cup cooked oatmeal, rice or whole grain pasta, or 2/3 cup dry cereal. The actual amount of whole grains a person needs varies depending on their body size and activity level. On average it is recommended to include 3 servings of whole grains daily.

- To ensure that bread, cereals, crackers and other grain products are whole grains check the ingredient list. The first ingredient listed will contain the word “whole” or “sprouted”.

**It is important to add fiber into your diet gradually to avoid undesirable side effects, such as gas and bloating.**

**If you have recently had any type of gastrointestinal surgery, chemotherapy or radiation treatment, your doctor may prescribe a low fiber diet while you heal.**

**When able, you can transition to a regular diet with a gradual increase in your fiber intake. It is recommended to consume 25-40 grams of fiber per day as tolerated.**

**Choose more plant-based proteins, limit red meat and dairy, and avoid processed meats.**

- Good sources of plant-based protein include beans and legumes like lentils.
- For animal sources of protein, choose lean proteins such as fish and skinless poultry over red meat and avoid processed meats such as hot dogs, bacon, and processed lunch meats.
- Eat more non-dairy sources of calcium such as calcium fortified almond or soy milk, sardines, tofu or kale for your calcium needs.
- When buying animal proteins, always choose the best quality that you can afford. Organic, grass fed or pasture raised choices are optimal. Eating smaller portions of animal based foods makes choosing higher quality more affordable.

**Include a probiotic rich food daily.**

- Fermented foods may be particularly beneficial for those with digestive issues due to their probiotic content.
- Fermented dairy products such as plain, unsweetened yogurt, kefir or buttermilk with live active cultures are great sources of probiotics. Other probiotic rich foods include miso, tempeh, natto, sauerkraut, and kim chee.
- A probiotic supplement may also be helpful. Ask your doctor or dietitian if a supplement would be a good idea for you to try and if they have a specific product they would recommend based on your individual needs. When choosing a probiotic supplement look for one that has at least 10 billion colony forming units (CFUs).

**Consume healthy fats.**

- Include healthy fats in your diet like olive oil, nuts, seeds, and avocados. Many nutrients are fat soluble and will be absorbed better when consumed with a little fat in the same meal.
- Plant sources of fats often contain other important nutrients as well. For example, including just 2 Brazil nuts daily provides 200% of your daily needs for selenium.
- Include good sources of omega-3 fatty acids daily. Omega-3 fats are essential fats so they need to be eaten regularly to supply adequate amounts to the body. These important fats are found in fatty fish (wild salmon, sardines, herring, trout, and sablefish), walnuts, pumpkin seeds, ground flaxseed and chia seeds.
  - Aim to eat 2-3 servings (3-4 ounces per serving) of fish per week.
  - Avoid a few key species of fish due to high mercury content such as King mackerel, marlin, orange roughy, shark, swordfish, tilefish, ahi tuna, and bigeye tuna.

**Drink plenty of fluids.**

- Drink water instead of sugary drinks and fruit juices.
- Include green and white tea daily for added phytochemicals.
- A good rule of thumb is to drink half your body weight in ounces. If you weigh 160 pounds you should drink about 80 ounces (10 cups or 2.5 liters) of fluid per day.

**Maintain blood levels of vitamin D in the normal range (Vitamin D, 25(OH) level = 30 – 100 ng/mL).**

- If your level is low you can increase your vitamin D with supplements, short exposure to sunlight, and by consuming food sources like fish or fortified foods.

**Whenever possible get nutrients from your diet, rather than supplements.**

**Maintain a healthy body weight.**

- If weight loss is desired, following a balanced diet, reducing portion sizes, and exercising daily to promote gradual weight loss is recommended.

**Engage in daily physical activity.**

- If able, engage in a level of activity that raises your heart rate and breathing such that you can only speak a sentence at a time. Start with small increments and build up to 3 or more hours of activity per week. Bouts of activity lasting at least 10 minutes count toward your weekly goal.

**Foods and habits to limit or avoid:**

- Limit red meat (beef, lamb and pork) to less than 18 ounces per week.
- Avoid processed meats completely. Processed meats are meats preserved by smoking, curing or salting, or addition of chemical preservatives. Ham, bacon, sausages, hot dogs and deli meats, are all considered processed meat.
- Minimize intake of foods with added sugars and refined grains such as desserts, sweetened breakfast cereals, flavored yogurts, and sugary drinks including fruit juices, sodas, sweetened coffee and tea drinks.
  - It is recommended that women limit their added sugar intake to less than 100 calories daily (6 teaspoons or 24 grams of sugar) and men to less than 150 calories daily (9 teaspoons or 36 grams of sugar).
  - It's fine to have a treat now and then as long as it's balanced out with a nutrient dense diet and you thoroughly enjoy it!
- Forgo or limit alcohol to no more than 1 drink per day for women and 2 drinks per day for men.
  - A drink is equal to 12 ounces of beer, 5 ounces of wine, or 1 ½ ounces of hard liquor.
- Limited saturated and animal fats. Saturated fats are found in red meat, poultry skin, full fat dairy products such as cheese, cream, butter and ice cream and coconut oil.
- Avoid trans-fats and hydrogenated oils found in some processed and fried foods.
- Avoid highly processed foods like fast foods. These foods tend to be high in calories, sodium, and added sugars and low in nutrients. As a cancer survivor it is important to fill your plate with nutrient dense, minimally processed foods whenever possible.
- Minimize sedentary behavior (e.g. watching TV, driving, and using a computer). If you must sit for extended periods of time, take frequent short breaks to stand up and, ideally, walk around.

**Putting it All Together**

A lifestyle that combines a healthy diet, regular exercise and stress management is a key component of a vibrant survivorship. The information in this summary can be used as a general guide for planning a nutritious diet. If you have recently completed or are currently in treatment, please ask your doctor or registered dietitian for specific dietary and activity guidelines, as your individual needs may be different. It is recommended to discuss any significant dietary changes that you are planning to make with your healthcare team.