

Nutrition and Cancer Treatment

Cancer is the 2nd leading killer in the United States, accounting for 1 in every 5 deaths each year. 40% of Americans will experience cancer at some point in their lives, with over one million new cases diagnosed every year. But there's some good news, too. Maintaining optimal nutrition during cancer therapy can reduce unfavorable side effects, promote recovery and improve the quality of life for patients undergoing treatment.

What is Cancer?

There are over 100 types of cancers identified and they all have some similar, as well as distinct, features. There is no *one* cause of cancer, but each one is multi-factorial, consisting of more than one influence from our genetics, our lifestyle, and the environment in which we live. Cancer cells look different under a microscope depending on what body organ and tissue are affected. A skin cancer cell will look different than a kidney cancer cell, a breast cancer cell or prostate cancer cell, and so on.

Carcinogenesis is the process through which normal cells are *transformed* into cancerous tumor cells. Researchers have identified the various steps in the progression of this cell transformation until malignancy occurs, which results in a cancer tumor. Because carcinogenesis consists of several steps, there are many places in the process where the body can attempt to interrupt the chain and change the course of events on the way to full-blown cancer.

Everyday, we come in contact with numerous agents that can cause genetic damage and start the process of mutating normal cells. Normal digestion causes the release of free radicals in the body, we are exposed to chemical carcinogens in the environment, viruses enter our body through various routes, and we are exposed to radiation – all processes that cause damaging changes to our cells. Our body has a system of repairing damaged cells and fighting foreign invaders through the immune system. Diet plays an important role in providing antioxidants to get rid of free radicals as well as internal chemical compounds like enzymes and certain hormones to help repair the daily damage. However, for whatever reason, when the damage cannot be repaired adequately, abnormal cells can begin to mutate further, increase in number, and eventually lead to cancer.

Lung cancer is the most common form of cancer, accounting for nearly ½ of all cancer diagnoses in the U.S. It is also probably the most preventable – clearly related to smoking. In 2001, over 169,000 Americans will be diagnosed with lung cancer and approximately 157,000 will die from it. The other “big” cancers in the U.S. include breast, colon, and prostate cancer. Breast cancer is the second leading cause of cancer death in women (second to lung cancer) with some 193,700 cases and 40,600 deaths expected in 2001. Prostate cancer is also

very common, but often survivable; and increased screening measures by health care professionals have made identifying cases much easier than in the past. Other cancers like pancreatic cancer have a much lower incidence, but a much higher risk of death. Most cancers can be influenced, at least in part, by dietary measures.

General Risk Factors for Cancer

Scientists are constantly working to identify risk factors, determine the cause, and someday find a cure for cancer. Since there are so many different varieties of cancer, there is no single, definitive list of factors that will lead to cancer. And with most cancers, the progression of the disease is related to multiple factors.

However, while differences do exist, there are some “global” risk factors that have been identified, in general, that increase the risk of certain cancers. Genetics does generally play a role in cancer, but genetics alone doesn’t mean a person will get cancer. The *combination* of genetics along with environmental exposures and lifestyle choices determine a person’s likelihood of getting cancer.

Environmental carcinogens include certain infectious agents, viruses, chemicals, tobacco smoke, asbestos, and other elements. Exposure to any of these may not definitively lead to cancer, but can increase the risk with prolonged contact or large doses.

Lifestyle factors include dietary and exercise preferences. Certain diets, such as those high in red meat, have been shown to increase the risk of certain cancers, while dramatically increasing fruit and vegetable intake alone can cut cancer risk up to 20%. Alcohol consumption can increase the risk of several cancers, while regular exercise and maintaining a healthy weight has shown to reduce the risk of certain cancers.

It often seems confusing to separate out and balance the factors that increase risk of cancer against those that reduce risk, but scientists have demonstrated that it’s the cumulative nature of genetics, environment and lifestyle that contribute to cancer risk. The good news is that we have some control over two of these three areas – environment and lifestyle – and can be active in the prevention or severity of certain cancers.

Nutritional Recommendations for Cancer Patients

While every cancer is different and every patient with cancer has a unique experience with the disease, there are some general nutritional recommendations that apply to most cancer patients. The main goal for a person with cancer is to maintain optimal nutritional status in order to keep the immune system functioning the best it can and to maximize the benefits of the cancer therapy. In general, this requires the use of a variety of different strategies and

dietary modifications to ensure that nutritious food is consumed on a regular basis.

Since every individual's experience with cancer is unique and because treatments can vary, providing nutritional support – whether for one's self, as a family member, or a member of the health care team like a Registered Dietitian – for people with cancer can be very challenging and demanding.

Many cancer treatments today cause a reduced appetite or decreased preference for many foods, which may lead to weight loss in a person with cancer. Rapid weight loss can reduce the effectiveness of some treatments and increases mortality. Therefore, it is very important to emphasize adequate calories and protein to maintain body weight, replace protein losses (nitrogen), and fight infection. In general, the recommendation for protein is increased in most cancers at 1.0-1.5 grams per kilogram body weight (1 pound = 2.2 kilograms). For example a 170-pound male adult with cancer may need between 77 and 115 grams of protein per day. This is higher than the general recommendation for healthy Americans at 0.8 grams per kilogram.

In sum, the general focus for most patients with cancer is to:

1. Prevent weight loss through increased calories and protein..
2. Eat a variety of foods everyday including grains (bread, rice, pasta, cereal), vegetables, fruit, protein, and dairy (calcium).
3. Assure adequate vitamin and mineral status through foods, and supplement if necessary to provide adequate, not excessive nutrients.
4. Eat regularly in a routine that is comfortable. Often a larger meal earlier in the day is preferable, with 5-6 small meals throughout the day as tolerated.
5. Follow specialized nutritional considerations as indicated for specific types of cancer.

Nutritional Considerations During Cancer Therapy

There are many different courses of treatment and medications used to treat the various cancers, but four of the most common include surgery, chemotherapy, radiation, and immunotherapy. Each has a variety of effects that can impact eating patterns and food preferences. Some of the symptoms most frequently experienced include nausea from the therapy or from formerly appealing tastes and smells, reduced or altered sensation of taste and smell, general lack of appetite, dry or sore mouth, diarrhea, constipation and fatigue.

In order to assure adequate nutrition while coping with potential side effects from treatment, here are a few suggestions.

- If certain foods are unappealing, experiment with preparing them differently or finding other foods that are more tolerable.

- Start a habit of trying new foods. You may find you need to alter your *pattern of eating* several times over the course of cancer treatments. Experiment constantly with new foods, or reintroduce foods slowly after a time away from them.
- Keep preparation simple. Buy nutritious convenience or ready-made foods to eliminate the time and effort in the kitchen, which very commonly causes nausea due to the different aromas from cooking, and can increase fatigue.
- Try foods at different temperatures and textures, colder foods are often easier to tolerate than warm foods, and preferences for soft or crunchy foods may change.
- Eat many mini-meals or snacks instead of larger meals that may be unappealing or cause discomfort and nausea.
- Change the environment in which you eat. Try eating with friends or while watching a TV program or movie to make the experience of eating more enjoyable and tolerable.
- Consume liquids – preferably water with or between meals throughout the day. Aim for 8 cups each day.
- Eat whenever you're hungry and have healthy snacks readily available.
- Discuss your diet regularly with your doctor or registered dietitian for additional suggestions.

The Bottom Line – Good Nutrition Can Promote a Good Outcome

Often when cancer patients are able to maintain or improve their nutritional status, newer cancer cells become more susceptible to the treatment, leading to a potentially improved prognosis. Improved nutritional status can also make patients eligible for treatments they may otherwise be denied. Maintaining a healthy weight and good nutritional status can reduce the side effects of treatment, improve recovery, and potentially maintain or improve the quality of life for the person living with cancer and undergoing treatment.

Today, increasing numbers of individuals who have experienced some form of cancer are able to call themselves “cancer survivors.” Nutrition plays an important – and ongoing – role in maintaining health and preventing further cancer.

There is clear and convincing evidence that diet is related to cancer *risk* and by some estimates, 30-40% of cancers could be prevented by a healthier diet and exercise. Whether preventing or treating cancer, nutrition is critical to maintain optimal health and potentially reduce the risk of side effects or further experiences with cancer.

References:

American Institute for Cancer Research. Internet site: www.aicr.org. (September 2001).

Escott-Stump, S. (1997). *Nutrition and Diagnosis-Related Care*, 4th ed. Baltimore: Williams & Wilkins.

National Cancer Institute. (1997). *Eating Hints for Cancer Patients*, NIH Publication No. 97-2079. Washington, DC: National Institutes of Health.

Shils, M.E., Olson, J.A., Shike, M., Ross, A.C., eds. *Modern Nutrition in Health and Disease*. 9th edition. Baltimore: Williams & Wilkins, 1999.

Zemen, FJ, Ney, DM. (1996). *Applications in Medical Nutrition Therapy*, 2nd ed. New Jersey: Prentice Hall, Inc.