



Special Nutritional Need

When a patient is battling cancer, it is more important than ever to maintain good nutrition in order to support the body's extra requirements as it works overtime to fight the cancer and repair the healthy cells that have been collaterally damaged as a result of cancer treatment. Yet, there are some obstacles that make it also a most challenging task at exactly this time.

The cancer itself causes anorexia (loss of appetite), which is the most common cause of malnutrition, and the inability to absorb the necessary nutrients from what little is eaten; these combine to cause cancer cachexia, a wasting syndrome that manifests as a loss of weight, fat and muscles, and makes the patient feel weak and lethargic.

The myriad side-effects of chemotherapy can also reduce the patient's desire and ability to eat, further impacting his or her ability to maintain adequate nutrition. This can range from nausea, vomiting, diarrhoea or constipation, infections, sores and mouth ulcers to chemosensory dysfunction, a condition where there is taste distortion, heightened sensitivity to odours and a persistent bad taste in the mouth.

Good eating habits and nutritional support helps the patient to cope with the demands of cancer and its treatment. There is an association between weight loss and shortened survival, and between nutritional status and outcomes of malignant disease.

Optimal nutritional support during and immediately following therapy has been shown to improve the rates of complete remission by reducing the occurrence of common nutritional problems, which interfere with host immunity and treatment response.

Dietary Modifications During Chemotherapy

1. Getting a well-balanced, healthy diet from natural sources, including fruits and vegetables, with a heavy emphasis on protein and caloric intake.
 - a. Eat small high-protein and high-calorie meals every 1-2 hours instead of 3 larger meals. Good choices include eggs, cheese, whole milk, ice cream, nuts, peanut butter, meat, poultry and fish
 - b. Add extra calories and protein to food (such as butter, skim milk powder, honey, or brown sugar)
 - c. If bothered by nausea, eat bland, soft, easy-to-digest foods rather than heavy meals. Eat before chemotherapy sessions
 - d. Eat snacks that contain plenty of calories and protein
 - e. Prepare and store small portions of favourite foods so they are easily accessible when hungry
2. Aim to obtain important vitamins and nutrients from food-based sources.
 - a. Eggs and nuts are great sources of B-complex vitamins, vitamin E and protein. Egg yolks are a good source of vitamin D. Peanut butter and crackers are an easy, no-prep snack that pack nutrients and may be easier to keep down
 - b. Milk, cheese, meat, fish, and poultry are also good sources of B-complex vitamins, as well as protein
 - c. Beans and other legumes offer plenty of B vitamins while helping meet protein needs
 - d. Green, leafy vegetables are great sources of vitamins like A, E, and K, as well as iron and other minerals

It is a common misconception that mega-doses of vitamin

of Women Undergoing Chemotherapy

supplements are necessary for all cancer patients. On the contrary, there is some concern that excessive vitamin supplements, especially those with high antioxidant contents, may actually interfere with treatment. In fact, *fat-soluble vitamins* in large doses can become toxic, because they can accumulate in the body. Vitamin A toxicity can lead to changes in bone development, liver enlargement, anaemia, and hair loss. Vitamin D toxicity can produce high calcium levels, leading to calcification in the kidney and blood vessels, and possibly result in osteoporosis. If there is a need for vitamin supplements to augment one's normal diet, one multivitamin per day from a reputable manufacturer is enough.

3. Loss of appetite is often associated with other eating difficulties such as nausea, taste changes, pain and constipation. By addressing these problems, the patient's appetite (and comfort) often improves. Be aware of chemo-related side effects and make the necessary adjustments.
 - a. **Stomatitis (mouth sores)** : Raw mouth ulcers may make it painful to consume citrus fruits and juices, which are acidic in nature. Peach and pear nectars, as well as applesauce, are good alternative sources of vitamin C. Take liquid supplements (special drinks containing nutrients), soups, milk, juices, shakes and smoothies when eating solid food is a problem. Oral anesthetic gels may be applied before food to numb the mouth and lips.
 - b. **Xerostomia (dry mouth)** : Consider commercial oral lubricants (saliva substitute) if suffering from xerostomia (dry mouth).
 - c. **Compromised Immune System** : The immune system can become compromised by cancer and its treatment, leaving one susceptible to bacteria and contaminants in food. Be sure to wash all fruits and vegetables carefully, and avoid raw or semi-cooked foods such as sashimi and half-boiled eggs.
 - d. **Abdominal Bloating and Constipation** : Avoid carbonated drinks and gas-inducing foods (such as beans, peas, broccoli, cabbage, Brussels sprouts, green peppers, radishes and cucumbers). Increase fibre intake and drink lots of water to help stimulate stool movement. Good sources of fibre include whole-grain cereals (such as oatmeal and bran), beans, vegetables, fruit and whole grain breads.
 - e. **Aversion to Tastes and Odours** : Cancer patients often complain of changes in their sensation of taste whilst undergoing chemotherapy, in particular a persistent bitter taste in the mouth. A sudden aversion for certain foods may occur.

Eat foods with odours that are appealing. Strong odours can be avoided by using boiling bags, cooking outdoors on the grill, using a kitchen fan when cooking, serving cold food instead of hot (since odours are in the rising steam), and taking off any food covers to release the odours before entering a patient's room. Cooking odours can be avoided by ordering take-out food.

Eat meals when hungry rather than at set mealtimes, and use plastic utensils if foods taste metallic. Use sugar-free lemon drops, gum, or mints to combat any residual metallic or bitter tastes in the mouth.

Try a "swish and spit" solution ; mix 1/2 - 1 teaspoon of salt or baking soda with a glass of water. Do this 4 - 5 times daily or more often.

- f. **Dehydration** : Some drugs can also cause kidney damage if they're not flushed out of the system in time, so during cancer treatment, it's particularly important to get enough fluids. Some people find it hard to drink enough water (chemotherapy can even make water taste strange), so consider getting some of the fluid intake through soups. Chicken soup is beneficial in replenishing electrolytes which are depleted by the side effects of treatment.
- g. **Electrolyte Disturbances** : Gatorade and other sports drinks also help maintain electrolyte balance.
- h. **Herbal Supplements** : Some herbal supplements can alter the absorption of chemotherapy drugs or cause some unintended interactions. For example, St John's Wort is known to induce the liver cytochrome P450 enzyme system, which is responsible for breaking down chemotherapy drugs into less toxic substances. Ensure that any herbal products or supplements taken during cancer treatment are made known to the oncologist.

The jury is still out regarding the role of phytochemicals and herbs in preventing and fighting cancer, and there are many studies under way looking into their use, but it appears that much of the encouraging herb/vitamin/cancer data from animal studies are not replicable in human studies. There isn't enough consistent and significant data at this point to draw any strong conclusions or recommend the routine use of such supplements.

Nutritional Support

For patients who are unable to meet their nutritional needs from diet alone, options may include the following :

1. Nutritional Supplements

If a patient is unable to eat enough at mealtimes, many experts recommend adding supplementary nutrition drinks to the menu. Most 8-ounce nutritional supplement drinks are fortified to provide 25% of the vitamins needed each day, as well as provide protein and caloric support.

2. Enteral and Parenteral Nutrition

Eating is the preferred method of nutrition and should be used as far as possible, but some patients may not be able to tolerate oral intake due to complications of cancer or its treatment, and alternative routes of nutrition may be required. This includes feeding liquids through a tube into the stomach or small intestine (enteral nutrition) and feeding specially-prepared nutrient formulas through a catheter directly into the bloodstream (parenteral nutrition). The feeding formulas are tailored to the individual patient's needs in consultation with a dietician.

3. Medications to improve the appetite such as low dose steroids or medroxyprogesterone acetate or megestrol acetate.

4. Medications to reduce nausea and vomiting.

Early nutrition screening and assessment can identify problems that affect the success of anticancer therapy. Patients who are underweight or malnourished may not respond well to cancer treatments. Malnutrition may be caused by the cancer or made worse as the cancer progresses. Finding and treating nutrition problems early may help the patient gain or maintain weight, improve the patient's response to therapy, and reduce complications of treatment.