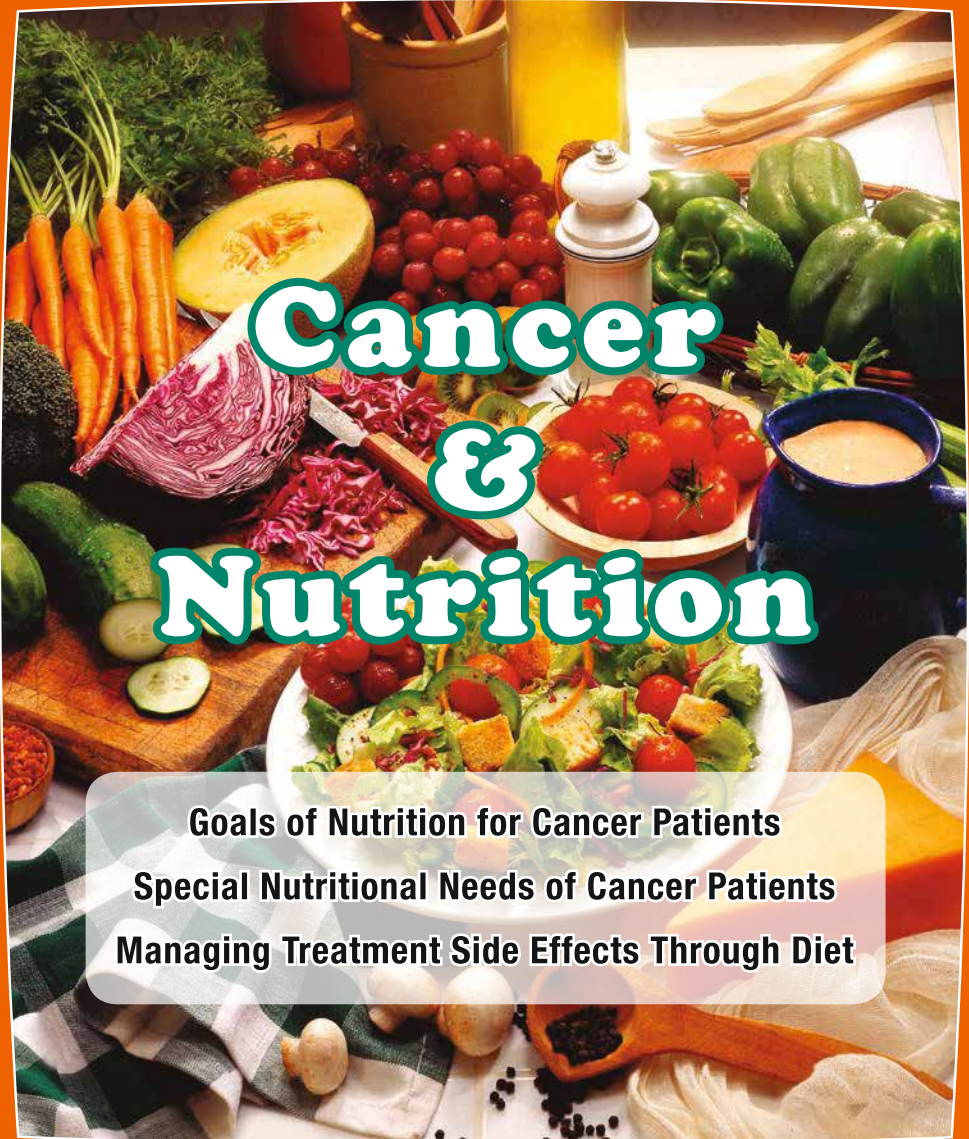


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National Cancer
Centre Singapore
SingHealth



Goals of Nutrition for Cancer Patients
Special Nutritional Needs of Cancer Patients
Managing Treatment Side Effects Through Diet

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Introduction

The act of eating enhances the quality of our lives. By giving us pleasure and satisfaction, food nourishes our emotions while giving sustenance to our bodies. Can you imagine how it would feel if we were to lose our appetite and find eating no longer pleasurable?

For many cancer patients, this is a sad reality. Medications often cause nausea, while radiation treatment can make the mouth sore. The sense of taste can also change.

Eating well is one way to fight cancer. Although there is no one single food that can cure cancer, eating and choosing the right kinds of food before, during and after treatment can help make you feel better and stay stronger. A balanced diet provides you with all the essential nutrients to better tolerate the side effects of your treatments

Recommendations about diet and eating for cancer patients may vary from the usual tips for healthy eating. Some of these recommendations may even seem to contradict what you have always known. Please feel free to contact us if you would like to discuss the points raised in this booklet. You can play an active role in your own treatment through proper nutrition. Enjoy the pleasure, comfort and healing power of eating.

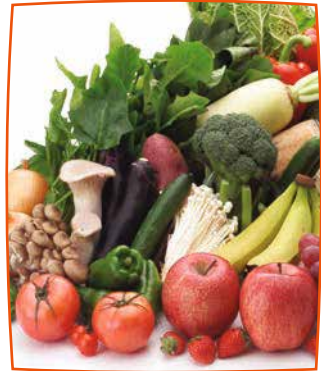
If you have any questions about the contents of this book, or if the information you are seeking is not covered here, please do not hesitate to contact the Cancer Helpline at 6225 5655 for more information.

Other cancer information booklets are also available at the National Cancer Centre Singapore, Cancer Education and Information Services. Contact the Cancer Helpline to request for a copy. For the electronic version of this and other booklets, please visit our website: www.nccs.com.sg

BENEFITS OF GOOD NUTRITION

Good nutrition is important for everyone and especially for you if you are being treated for cancer. This is because many factors related to the illness itself, as well as its treatments, may affect your appetite, and your body's ability to tolerate certain foods.

However, please note that nutritional needs of individuals undergoing cancer treatment vary from person to person. Nutrition recommendations for individuals with cancer focus on the maintenance or achievement of a healthy weight, and a balanced intake of nutrients. Essential nutrients found in food are protein, carbohydrates, fats, vitamins, minerals and water.



Protein

Protein is essential for building muscles, repairing tissues, healing wounds and maintaining a healthy immune system. Inadequate protein intake slows down recovery from illness and lowers resistance to infection. During illness, protein needs are often increased. Following surgery, chemotherapy, and radiation therapy, additional protein is usually needed to heal tissues and to help prevent infection. Quality sources of protein include lean meat, fish, poultry, eggs, dairy products, tofu, taukwa, nuts, dried beans, dahl and chickpeas.

Carbohydrates and Fats

Carbohydrates and fats are the body's major energy (calorie) sources. Your calorie needs depends on your age, body size, level of activity and health status. Sources of carbohydrates include rice, noodles, chapatti, bread, pasta, biscuits, oats, potatoes, corn, beans, dairy products, fruits and starchy vegetables. Sources of fats include butter, margarine, oils, nuts, seeds, and fat which naturally occur in meat, fish and poultry.

Vitamins and Minerals

Vitamins and minerals are essential for proper growth, body functions and development. If you are eating a balanced diet with enough calories and protein, chances are you will get enough vitamins and minerals. However, eating a balanced diet can be difficult if you are having side effects from cancer treatment eg. nausea and loss of appetite. This situation may continue for some time. In this case, the doctor may prescribe a daily multivitamin and mineral supplement for you.

Water

Water and fluid are very important. A large percentage of your body weight is made up of water. If you do not drink enough fluid or if you are vomiting or having diarrhoea, you may become dehydrated. Ask your dietitian, doctor or nurse how much fluid you need each day to prevent dehydration. Fluids can be taken in the form of plain water, barley water, chrysanthemum tea, clear soup and fruit juices. You can also take nourishing beverages like milk, Milo, Horlicks, Ovaltine or soybean milk and complete nutritional supplement that may be recommended by your doctor or dietitian.

GOALS OF NUTRITION FOR CANCER PATIENTS

Any dietary problems you had before your diagnosis may be made worse by the cancer and its treatment. Sometimes, it may be difficult to distinguish between problems that are caused by cancer and its treatment, or problems that have nothing to do with cancer.

Severe weight loss and malnutrition can interfere with the functioning of the heart, liver, kidneys and other important organs of the body. You should take extra care to ensure that you are eating well, more so if you are recovering from surgery or having chemotherapy or radiation therapy. You must eat enough nutrients for your body to function at its best before, during and after treatment. This means eating foods with the proper balance of protein, carbohydrates, fats, vitamins, minerals and fibre.

Nutrition is an important aspect of total cancer treatment. Eating nutritiously while undergoing cancer therapy can help you to:

- feel better
- keep up your strength and energy level
- keep up your weight and your body's nutrition stores
- better tolerate treatment-related side effects
- recover and heal as quickly as possible



SPECIAL NUTRITIONAL NEEDS OF CANCER PATIENTS

You may experience physical or mental changes as you undergo treatment for cancer. Cancer may interfere with the functioning parts of the body used for eating and digestion. It may also affect your body's ability to tolerate certain foods and the way the body uses nutrients. Weight loss is very common among cancer patients. Sometimes it is caused by a loss of appetite due to the cancer itself, cancer treatment or feelings of depression.

Eating less is the usual response during these times, but eating more is not uncommon either.

Some foods may taste less appealing during cancer treatment, and as a result, you may eat less of them. Many cancer patients have expressed that "food just doesn't taste the same". You may also feel this way as cancer treatments can cause a bitter or metallic taste in the mouth. There are also those who lose their sense of taste. These people no longer enjoy their food, and taste preferences can change from day to day. Common foods such as beef, chicken, vegetables or fruit may seem flavourless. Even salty or spicy foods may taste bland. Beef or pork and foods containing caffeine may seem bitter and desserts may taste too sweet. You need to try and make changes to find what is palatable to you.

Your doctor, nurse or dietitian will advise you on your nutritional needs. You may be advised to eat more high calorie foods if you suffer from a poor appetite or you may be encouraged to eat less of certain high fibre foods when you are having diarrhoea.

HOW CANCER TREATMENT AFFECTS NUTRITIONAL NEEDS

Conventional treatments for cancer, such as surgery, radiation therapy and chemotherapy, usually affect your nutritional needs and your eating habits. Treatment side effects that may affect nutrition are:

- Soreness of the mouth, tongue and throat
- Diarrhoea
- Constipation
- Nausea
- Vomiting
- Taste changes
- Appetite changes
- Weight changes
- Strong dislike for certain foods



The extent of the side effects may vary according to individuals.

Surgery

This is often the preferred treatment for “solid” tumours such as colon and breast cancer other than those of the blood or lymph glands. Whether or not surgery is recommended depends on the type of cancer, its location, and if it has spread to other parts of the body. There is a possibility that surgery may cause temporary or permanent nutritional problems. Long-term nutritional problems may also occur when parts of the gastrointestinal tract are removed or altered. Undergoing an operation will also increase your need for calories to help in wound healing.

Chemotherapy

Chemotherapy uses drugs to treat and control cancer. It can be used alone or in combination with radiation therapy or surgery. Unlike the other two treatments, chemotherapy affects the entire body rather than just part of it. When this happens, side effects may occur. For example, the cells lining the inside of the mouth, gullet and intestines are sensitive to chemotherapy. Therefore, side effects like diarrhoea, constipation or poor absorption of nutrients from food may occur. Fortunately, these side effects last only for a short time because normal cells are able to reproduce and replace themselves every 3 days. Some drugs may cause a strange taste in the mouth, which makes eating unpleasant. Other drugs, such as hormones, can cause water retention and bloating. Although weight loss is the usual concern with cancer, weight gain and increased appetite are possible too.

Radiation Therapy

Radiation therapy uses electromagnetic waves to kill and control cancer cells. It can either be used alone or in combination with surgery or chemotherapy. Sometimes it is used to reduce pressure, bleeding or pain caused by the cancer. Radiation treatments can lead to nutritional problems when the gastrointestinal tract lies in the primary treatment area. Some problems occur early in treatment and last only a short time, while some appear after therapy and are longer lasting.

PREPARING YOURSELF FOR CANCER TREATMENT

Many people have few or no eating-related side effects. Until your treatment actually starts, you will not know exactly what side effects you may have or how you may feel. Even if you do have side effects, they may be mild, and most go away after cancer treatment ends. There are new drugs now that can control these side effects. One way to prepare for them is to think of your treatment as a time for you to concentrate on yourself and on getting well. Here are some ways to get ready.

Think positively

- 🍎 Have a positive attitude, talk about your feelings, be well informed about your cancer and treatment, and plan ways to cope. By doing these, you reduce your worry and anxiety, making you feel more in control and helping you maintain your appetite.
- 🍎 Give food a chance. Even if you do have eating problems, you will have days when eating is a pleasure. Eat whenever you feel less tired or eat smaller amounts whenever you feel hungry.

Eat Healthily

- 🍎 A healthy balanced diet is vital for a person's body to work at its best. This is even more important for people with cancer.
- 🍎 If you have been eating a healthy balanced diet, you will go into treatment with reserves to help keep up your strength, prevent body tissue from breaking down, rebuild tissue, and maintain your defenses against infection.
- 🍎 People who eat well may be able to cope better with side effects. In particular, it is important to maintain a balanced diet so that there is no possibility of becoming severely deficient in vitamins & nutrients.
- 🍎 Do not be afraid to try new foods. Some things you may never have liked before may taste good to you during treatment.



MANAGING TREATMENT SIDE EFFECTS THROUGH DIET

Eating a balanced diet means eating a variety of foods to make sure that you are getting all the nutrients necessary for good health. While there are no special foods that should be eaten or avoided during your treatment, eating a balanced diet or making some changes to your usual diet can help you overcome some of the nutrition-related problems that may occur. Sometimes, your diet may not be enough to meet your needs, in this case, a dietitian can help. Discuss this with your treating doctor.

IRRITATION & INFLAMMATION OF THE MOUTH, THROAT AND TONGUE

“My mouth and throat are so sore” “My mouth is extremely dry”

The lining of the mouth and throat are among the most sensitive areas of the body and may be sensitive to some types of chemotherapy and radiation treatments. Soreness of the mouth and throat can occur within a week after chemotherapy and 2 or 3 weeks after radiation therapy. These treatments can also affect the salivary glands and may cause dryness of mouth and painful swelling of the glands. In some cases, mouth ulcers may also develop. Healing will occur more rapidly with a healthy balanced diet and good oral care.

Helpful tips:

- a. Speak with your doctor about the problem. He or she may prescribe an oral lubricant or anaesthetic to relieve the discomfort.
- b. Drink extra fluids each day (8 to 10 glasses) if you are not on fluid restriction. If you prefer fruit juices instead of plain water, choose juices low in acid, such as, apple, watermelon and honeydew to avoid irritation to the mouth. Barley and chrysanthemum drinks are light and refreshing and they do not irritate the throat and mouth.
- c. Moisten food with gravy, sauces or soups. Steamed or stewed dishes are easier to swallow. You can dip dry foods like biscuits and bread into beverages before eating them.
- d. Choose smooth, soft, creamy textured food like cream soups, mashed potatoes, porridge, puddings, custards, ice-cream and soupy noodles. They cause less irritation and reduce chewing time.
- e. Avoid foods that irritate the mouth. These may include:
 - Very spicy, sour or salty foods eg. curry, chilli, oranges, pure orange juice, pineapple, assam, tom yam soup, pepper, pickled fruits and vegetables.
 - Very hot or very cold foods and drinks. Extreme temperatures may irritate the mouth further. Eat your food lukewarm.
 - Caffeinated or highly sugared drinks as they may cause further dryness.
 - Hard, crunchy and rough foods such as raw vegetables and fruits, nuts, biscuits, crackers and wholemeal bread.
 - Foods that are deep-fried and grilled as these foods tend to be hard. You can try steaming, stewing or slow-cooking to obtain soft textured food.
 - Fizzy drinks and alcohol.
- f. Adjust the amount of seasoning and spices to suit your taste. Be careful not to over-flavour your food. Ask someone to help you to taste.
- g. Use plastic or porcelain cutlery to reduce the metallic or bitter taste in your mouth.

- h. Practice good oral hygiene. Avoid commercial mouthwashes, as most of them are too harsh for a sore mouth. Use what your doctor prescribes or just simply gargle with salt water before and after meals to keep your mouth clean.
- i. Rinse your mouth often and suck ice-cubes to relieve mouth dryness. Avoid mouthwashes containing alcohol as they will further dry your mouth.
- j. Avoid smoking as it can irritate your mouth and throat.

TASTE CHANGES

“Food just doesn’t taste the same”

Chemotherapy, radiotherapy, medication or infection can cause taste changes. Some people have a bitter or metallic taste in their mouth. Others may feel numbness that blocks some taste. Sweet foods may be harder to taste and bitter foods may taste stronger than before. These taste changes are often temporary.

Helpful tips to overcome unpleasant, altered or reduced taste sensations:

- a. Adjust the amount of flavourings, seasonings and spices used in cooking until you obtain the taste you desire.
- b. Experiment with soy sauce, fish sauce, vinegar, pepper, turmeric powder, honey, ketchup, herbs, lime juice, chilli sauce and other seasonings.
- c. Do not force yourself to eat foods that taste unpleasant. Instead, find substitutes for those foods. If red meat tastes bitter and metallic, have some white meat like chicken or fish instead. Eggs, tofu, taukwa, dhal or beans are also good sources of protein and can be used as substitutes for meat.
- d. You can drink from a straw to bypass your tastebuds.
- e. Brush your teeth and rinse your mouth before meals.
- f. Chew sour plums, preserved orange peels, lemon drops or mints after meals to help get rid of any undesirable taste that lingers after eating.
- g. Allow hot food to cool a little before eating as high temperatures can enhance the unpleasant taste.
- h. Encourage smaller, more frequent meals.

CHANGES IN APPETITE

“I’m not hungry” “I feel so full after eating just a little”

Appetite can come and go. There may be times when you do feel like eating. Changes in appetite is a common problem for people receiving treatment for their cancer. If you really do not enjoy eating, you may want to concentrate on eating and drinking just for the nutritional value of the food. Your body needs the nutrition to fight the cancer and the side effects of treatment. Eat more when you can and when you feel like it.

Helpful tips to maintain or improve appetite:

- a. Eat smaller amounts of food more frequently instead of eating three normal-sized meals.
- b. Place small servings of food on your plate so it does not seem to be such an impossible task to eat a whole meal.

- c. Keep to a pre-planned meal pattern as it may help to eat by the clock. For example, eat a small snack every 2 to 4 hours even if you are not hungry. Eat an additional snack before going to bed.
- d. Keep snacks handy for nibbling at any time. Carry an easy-to-eat snack pack in your pocket or bag. Some ideas for your snack pack can include raisins, steamed pau, Japanese pancake, candy bars and wafers, bite-sized sandwiches and buns, bananas, jelly and puddings, biscuits and crackers.
- e. Sometimes you may prefer to drink rather than eat. Nutritional supplements are good alternatives to provide you with a quick and convenient balanced diet in liquid form. Supplement drinks like Enercal Plus, Ensure Plus, Resource Plus, Nutren Optimum and Complan are rich in nutrients and provide calories, protein, vitamins and minerals. You can also add the powdered supplement into your beverages like Milo, Ovaltine and Horlicks.
- f. Limit your fluid intake 1 hour before meals so that your stomach has room for food. Also avoid gassy drinks. Drink water and other fluids in between and after meals.
- g. Eat with your family or friends so that meal times are enjoyable social occasions.
- h. Choose foods with attractive colours, textures and flavours. Use different spices and sauces in cooking; add garnishing to make food look more appealing. Food that looks and smells good is more appetizing.
- i. Help your appetite by eating food you enjoy rather than struggling with foods which you find distasteful or unpleasant. It is alright to indulge in your cravings and favourite foods when you desire.
- j. Do light exercises to help stimulate your appetite. Try exercising ten minutes before meal times to increase your appetite.

FOOD SUBSTITUTES

When you are undergoing treatment for your cancer, you may not like eating certain foods that you usually eat when you were well. However, you can still have a healthy balanced diet by making the right choices. Below are some nutritious food substitutes that you can choose from:

Rice substitutes:

- porridge
- oats
- thosai
- crackers & biscuits
- spaghetti & pasta
- macaroni
- chappati
- cereal
- noodles
- potato
- breads & cakes

Meat substitutes:

- chicken
- pasteurised cheese
- taukwa
- fish
- beans
- tempeh
- eggs
- tofu
- dahl

Fruit and vegetable substitutes:

- canned fruits
- vegetable soups e.g. tomato, pumpkin or corn soup
- dried fruits
- fruit juices



High energy and high protein snacks:

- plain crackers or biscuits with a spread of jam, kaya, honey, peanut butter, margarine or cheese
- sandwiches with either tuna, ham, egg, sardine or cheese filling
- steamed buns eg. meat or vegetable pau, chee cheong fun, soon kueh
- desserts such as tau suan, tau huay, green or red bean soup, sweet potato soup
- nuts and beans
 - dried fruits eg. apricots, raisins, guava
- ice-cream
 - cereal bars

Beverages:

- Milk
- Ovaltine
- Chrysanthemum tea
- Nutritional supplements eg. Enercal, Ensure, Complan, Nutren Optimum, Ensure Plus, Resource Plus
- Milo
- Soybean drink
- Horlicks
- Barley water

NAUSEA & VOMITING

“I can’t even stand the smell of food, it makes me feel nauseous”

Nausea, vomiting and a feeling of fullness can occur after chemotherapy and radiation treatment of the head, abdominal and pelvic areas. Not everyone suffers from it, nor do those who experience it suffer to the same extent. Nausea and vomiting are often temporary conditions related to the treatments you are receiving. Other factors such as emotional stress and anxiety can also upset your stomach.

If you feel nauseous, see your doctor. Under these circumstances, it is best to eat very small, light meals. Ask your doctor to prescribe anti-nausea or anti-vomiting medicine and take them ½ to 1 hour before eating. This will allow time for the medication to take effect. Remember to eat well when you feel better again so that you can make up for the nourishment you have missed.

Helpful tips to manage nausea:

- a. Have small frequent meals. Eat small amounts of food often and slowly so that your stomach does not get too full.
- b. Do not skip meals as an empty stomach can make nausea worse. If you are likely to be subjected to a long wait for your treatment or to see your doctor, take a nourishing drink or snack with you.
- c. Eat your largest meal of the day at the time you feel best; usually at breakfast.
- d. If you feel sick in the morning, have some dry foods such as crackers or toast before getting out of bed.
- e. Small amounts of salty or sour foods such as salted crackers, sour plums and pickled mangoes can help reduce nausea.
- f. Some traditional remedies such as ginger and orange peel can be helpful in relieving nausea. These can be taken as preserved ginger, preserved orange peel or ginger tea.
- g. If possible, stay out of the kitchen while food is being cooked as the smell of hot food may trigger nausea. Opt for foods that smell less overpowering. Cold food or food at room temperature is more palatable.
- h. Do not eat your favourite foods when you feel sick as you might start to dislike them.

- i. Certain foods tend to trigger nausea. They are usually
 - deep-fried, greasy and fatty foods eg. fried chicken, luncheon meat and fried kway teow
 - spicy foods eg. curry, chilli
 - very sweet foods eg. cakes, nonya kueh
 - food or drinks with strong odour eg. coffee

However, if these foods can be tolerated, you can continue to enjoy them.

- j. Sip fluids regularly to prevent dehydration, e.g. barley water, ginger tea, carbonated drinks, clear soups and oral nutritional supplements.
- k. Rest after meals, but don't lie down flat for at least 2 hours after eating. Make sure you keep your head and shoulders propped up higher than your feet when you are resting after meals.

Helpful tips to manage vomiting:

If you can avoid situations that make you feel nauseous, you will reduce the likelihood of vomiting.

- a. If persistent vomiting occurs, do not try to force yourself to eat. Start by sipping small amounts of fluid as often as possible. If you are not able to keep fluids down and this lasts for more than 24 hours, you should see a doctor.
- b. If your vomiting is controlled but you still feel nauseous and full, it is important that you try to eat very small, frequent meals. Hunger can often aggravate or prolong nausea. Start by drinking cold or iced drinks. Try drinking fluids such as juices and chrysanthemum or barley drinks. Avoid rich, sweet and strongly flavoured fluids like coffee.
- c. Once you are confident that you can manage fluids without discomfort, start eating small amounts of solid foods such as plain biscuits, toast, crackers or cereals. You can also add flavouring to enhance the taste of plain porridge and take fruits such as apples, pears and watermelon.
- d. Increase your food intake slowly until you are eating a normal well-balanced diet.



CONSTIPATION

“I have problems moving my bowels”

Constipation occurs when your bowel movements are irregular and infrequent and you have hard stools that are difficult to pass. Most people move their bowel once every day but just because you miss a day or two does not necessarily mean you are constipated. Constipation can result from certain types of chemotherapy drugs. It can also be caused by medication such as pain killers (particularly codeine or morphine), inactivity, inadequate fibre intake or drinking too little fluid.

Dietary fibre plays an important role in preventing constipation. Include some fibre in your daily diet. It is better to help your bowel movement with diet and adequate hydration rather than depend on medication. However, if your symptoms persist, consult your doctor.

Helpful tips to manage constipation:

- a. Try to establish a regular meal pattern which will help to regulate your digestive processes.
- b. Include some fibre into your daily diet. Good sources of fibre include:
 - all leafy, non-leafy and starchy vegetables
 - fresh, tinned and dried fruits
 - wholegrain products eg. wholemeal bread, wholemeal crackers, weetabix, branflakes, oats, brown rice
 - nuts, beans and lentils eg. dhal, red or green beans, baked beans, soya beans, chickpeas, peanuts, almonds
- c. Drink at least 8 to 10 cups of fluids a day to ensure adequate hydration. These can include juices, soups, water, milk and other beverages. Reduce your intake of caffeinated beverages such as coffee and colas as they tend to dehydrate the body.
- d. Try some (1/2 glass) prune or apple juice as they contain sorbitol, a natural laxative.
- e. Do light exercises such as walking as this will sometimes help stimulate bowel movements.
- f. Remember to drink more fluids when taking fibre supplements if they have been recommended. High fibre intake with insufficient fluid intake may add to your problem of constipation.



Some suggestions of high fibre foods

Vegetables:

- broccoli
- cauliflower
- kangkong
- pumpkin
- cabbage
- celery
- peas (green peas / snow peas)
- spinach
- carrots
- corn
- potatoes
- sweet potatoes

Fruits:

- apples with skin
- kiwi fruit
- papayas
- prunes
- watermelon
- bananas
- fresh or dried mangoes
- pears with skin
- raisins & sultanas
- guavas
- oranges
- pineapples
- strawberries

Breads, Grains, Cereals & Beans:

- whole grain bread
- red and green beans
- brown rice
- whole grain crackers
- kidney and black-eyed beans
- branflakes, muesli, oats
- popcorn
- chick peas
- weetabix



DIARRHOEA

Diarrhoea is frequent passage of loose or watery stools and may be caused by radiotherapy to the abdominal region, chemotherapy, an infection, a change in your diet, a food allergy or other drugs. If you have diarrhoea and it is causing you distress, see your doctor for further advice.

Helpful tips when having diarrhoea:

- a. Take a low fibre diet as it may help decrease cramps and gas. Foods high in fibre are vegetables, fruits, wholegrain products, brown rice, nuts and seeds. If they seem to make your diarrhoea worse, you can avoid them temporarily.
- b. Drink plenty of fluids between meals, eg. barley water, diluted fruit juice or clear soup to keep hydrated. Avoid prune juice and beverages containing caffeine (e.g. coffee and tea) as they tend to worsen diarrhoea.
- c. Avoid dried fruits such as apricots, raisins, dates and prunes.
- d. Avoid oily, deep-fried, hot or spicy foods as they tend to aggravate diarrhoea. Soft, bland and low-fat foods like porridge, bee hoon soup, fish, and eggs are better tolerated.
- e. Avoid eating raw fruit and vegetables with skin or seeds, and dishes with coconut milk, rich gravies and sauces.
- f. Have small meals with nutritious snacks in between if you need. Relax before meals and snack times.
- g. Temporary lactose intolerance may occur with diarrhoea. If this occurs, change to lactose-free milk or low-lactose milk eg. HL milk, Anlene Plus, soybean or rice milk. Similarly, you may need to change from a lactose-containing nutritional supplement (eg. Complan) to lactose-free nutritional supplements such as Ensure, Enercal Plus, Resource Plus and Nutren Optimum.
- h. Resume a balanced diet gradually when your diarrhoea have stop.

INDIGESTION AND BLOATEDNESS

You may experience episodes of indigestion or 'heartburn' during your treatment. Sometimes you may even feel bloated. Medication is available for heartburn. Ask your doctor for medication, eg. antacids and take them before meals.

Helpful tips to manage or relieve indigestion and bloatedness:

- a. Avoid fried or greasy foods. Fat stays in your stomach longer and makes you feel full. Avoid spicy and hot food, coffee and alcohol as they may trigger heartburn. Milky drinks may help relieve it.
- b. Eat foods high in protein eg. meat, fish, eggs, tofu.
- c. Eat small frequent meals throughout the day. Drink your beverages between meals, rather than during meals.
- d. Avoid overeating and chew food thoroughly before swallowing.
- e. Certain foods tend to cause gas formation. They are:
 - carbonated beverages e.g. soft drinks
 - milk and milk products e.g. cheese, ice cream, etc
 - certain fruits e.g. apples, pears, peaches
 - legumes and lentils e.g. beans, peas
 - vegetables e.g. cabbage, cauliflower, garlic, onionsHowever, if these foods can be tolerated, you can continue to enjoy them.
- f. Do mild exercises eg. walking after meals may help relieve bloatedness.



WEIGHT LOSS

Weight loss results from the effect of cancer itself, side effects of treatment and not being able to eat enough food to meet your daily nutritional requirements. Early satiety, loss of appetite, nausea, vomiting and other nutrition-related problems can hinder food intake. If you are losing weight, you may find the following tips useful in helping you gain or maintain your weight.

Helpful tips to gain or maintain your weight:



- The above diagram gives you a general guide on what food to consume more so as to boost your energy intake. Increase the amount of protein foods in your diet first, then the amount of carbohydrate foods and sugar, and lastly the amount of fat. Eating extra amount of fats and sugar is an easy way of boosting your calories but check with your doctor or dietitian first if you have diabetes or heart disease.
- Try to make every mouthful you eat and drink count. For example, drink nourishing fluids like Milo, milk and soybean drink instead of plain water or clear soup.
- Use the “adding” principle to enrich the foods you eat.
 - Add minced meat, fish, egg or tofu to porridge and try to eat high protein snacks and foods at each meal and snack
 - Beat an egg into your chicken soup
 - Apply more margarine spread, cheese spread, peanut butter or kaya on crackers
 - Add Milo, Horlicks or Ovaltine to plain milk
 - Add condensed milk, sugar or raisins to oats
 - Add tuna, ham, sardine, cheese or eggs to bread
- If you do not feel hungry, have small frequent snacks throughout the day rather than three large meals. Store up nutritious snacks in the house.
 - Biscuits with cream, cheese, jam or peanut butter filling
 - Sandwiches or buns with tuna, sardines, ham, cheese and egg filling
 - Soon kueh, steamed pau, Japanese pancake, fried popiah, goreng pisang, nonya kueh/waffles with spread e.g. kaya, jam
 - Red or green bean soup, tau huay, tau suan
 - Fresh, tinned or dried fruits
 - Nuts and lentils eg. peanuts, cashew nuts, boiled chickpeas
 - Cheese, ice-cream
- You can also use nutritional supplements to boost your calorie and nutrient intake. They can be milk-based like Resource Plus, Enercal Plus, Ensure, Nutren Optimum and Complan, or non-milk based like Resource fruit beverage. Most of the nutritional supplements taste better when chilled and if you find the milk-based ones too sweet, you can add coffee or cocoa powder.
- If weight loss persists, consult your doctor.

NUTRITION AFTER TREATMENT ENDS

Most side effects due to cancer treatments usually subside after the treatment ends. If you have had side effects, you will gradually begin to feel better and your interest in food will return. Sometimes, side effects may persist, especially weight loss. If this happens, speak with your doctor and dietitian to work out a diet plan to address the problem.

As you begin to feel better at the end of your treatment, you may want to go back to your usual diet. This is an important time for you to eat well to help your body recover from the effects of cancer treatment. There's no study that suggests the foods you eat will prevent cancer from recurring but eating the right foods will help you regain your strength, repair damaged tissue and improve your general well-being.

Suggestions for healthy eating

- Eat a variety of foods every day. No one type of food contains all the nutrients you need.
- Try to eat at least 2 servings of fruits and vegetables each day including citrus fruits, dark green and deep yellow vegetables such as spinach, kai lan, carrots, tomatoes, pumpkin, etc.
- Include high fibre foods, such as whole grain breads and cereals, oats and brown rice. These foods are good sources of carbohydrates, vitamins, minerals and fibre.
- Substitute meat or chicken with tofu, taukwa, dhal, chickpeas or tempeh for more variety.
- Cut down on fat, salt, sugar, smoked and pickled foods, as well as alcohol. Choose low-fat milk products, small portions of lean meat and poultry without skin.
- Try low-fat cooking methods such as steaming, stewing, blanching and stir-frying.



COMPLEMENTARY AND ALTERNATIVE NUTRITION THERAPIES

Many individuals are interested in making changes in their diet, lifestyle and in the use of alternative therapies that will help them fight their cancer. A therapy is called complementary when it is used in addition to conventional treatments; it is often called alternative when it is used instead of conventional cancer treatment such as surgery, chemotherapy and radiation therapy.

Although these types of therapies have been described by some people as cancer cures or therapies to prevent cancer, to date there is no scientific evidence to show that these therapies are effective as primary cancer treatments.

Megavitamin therapy

Some individuals with cancer take large amounts of vitamins and minerals because they believe these products can enhance their immune systems or even destroy cancer cells. The common vitamins taken are vitamins A, C, and E and the common minerals taken are selenium and zinc. Many of these vitamins and minerals also act as anti-oxidants, which have been scientifically proven to interfere with chemotherapy when taken in large dosages. Drug toxicity can also happen with excessive vitamins and mineral intake especially in the form of supplements. We do not advise taking more than the recommended daily allowance.

Herbal or botanical therapies

Herbal or botanical medicine (the use of herbs to prevent or treat disease) has been practiced for hundreds of years and many useful drugs have been purified from plants. The interest in herbal medicine or natural remedies continues today. Many use the word “herbals” to describe all types of therapy, but technically herbs are defined as the leaves of the plant and “botanicals” refer to the remainder of the plant including the flowers, bark, stems, roots and plant extracts. They are available in pill or liquid extract forms, teas and ointments. Many of these products have unknown properties and some may even be contaminated. Others may cause severe and harmful side effects and interfere with proven effective anti-cancer therapies like chemotherapy and radiation therapy.

Discuss with your doctor before taking or using any herbal or botanical remedies.

Macrobiotic diet

This therapy believes that illnesses are due to the imbalance of yin and yang. The diet is made up of mainly unprocessed grains like brown rice, wholegrain bread and wholegrain cereals. It excludes red meat, refined food and sugar. A small amount of white fish and dairy products is allowed occasionally. To date there is no scientific evidence that this diet cures or prevents cancer and it has its own setbacks. This diet is very high in fibre and low in calories and therefore not recommended for people who experience loss of appetite, loss of weight and diarrhoea. Because the diet restricts protein food and dairy products, it does not provide sufficient vitamins B2, B12, D, or minerals such as iron and calcium. We do not recommend this diet.

Raw foods diet (plant-based)

Raw foods have been claimed to be “living food” and the enzymes and chlorophyll found in raw foods are supposedly beneficial. This diet recommends only raw vegetables, fruits, seaweed, sprouted seeds, nuts and seeds and vast quantities of juices. The large amount of fibre juice may cause diarrhoea.

Like the macrobiotic diet, this diet is unbalanced, lacking in calories, protein, vitamin B12, calcium and iron. The diet may also put you at risk of muscle wasting and decreased immunity against infections. We do not recommend this diet.

SAFETY CONSIDERATIONS

- Inform your doctor if you intend to use herbal products and supplements or have already started using them even before your conventional cancer treatment.
- Ask your doctor for reliable information on these products. He or she can discuss with you about any study that has been done and whether or not the treatment is safe or would interfere with your treatment.
- Check the product labels for both the quality and concentration of active ingredients contained in each product.
- Stop taking the product immediately and alert your doctor if you experience side effects such as wheezing, itching, numbness, tingling in the limbs or unexplained effects.
- Discuss your nutritional needs with a dietitian. He or she can devise an individualised diet plan on how to modify your diet so that you can get all the nutrients that your body needs.



SPECIAL NOTES FOR CAREGIVERS

There is much that you can do to help your friend or loved one through the period of cancer treatment. Here are some things to remember that will help you cope:

- Be prepared for the patient's food preferences may change from day to day. Some days he will not want his favourite foods because they do not taste good. Other times, he will be able to eat a dish that could not be tolerated the day before.
- Be prepared for times when the patient is able to eat only one or two foods for a few days in a row, until side effects diminish. Even if he cannot eat, you can still encourage him to drink between 8 to 10 glasses of nourishing fluids a day.
- Try to be patient when encouraging the patient to take food and drinks. Encourage and support without being overwhelming. Be alert to the possibility of depression.
- Talk to the patient about needs and concerns and about ideas that might work best. Be flexible and supportive as this will help the patient feel in control of the situation.

OTHER CANCER RESOURCES ON THE INTERNET

American Cancer Society

<http://www.cancer.org>

American Institute for Cancer Research (AICR)

<http://www.aicr.org>

Food and Nutrition Information Center (FNIC)

<https://www.nal.usda.gov>

International Food Information Council Foundation

<https://ific.org>

National Cancer Institute

<http://www.cancer.gov>

REFERENCES

1. 'Cancer Survivors Cookbook' by Donna L. Weinofen, RD, MS and Christina Marina, MD, MPH, Chronimed Publishing, Minneapolis.
2. 'Eating made easy. Nutrition tips for patients with cancer.' by KK Women's and Children Hospital, Singapore.
3. 'Eating Smart. Recipes for healthy living.' by the American Cancer Society, Texas Division, Inc.
4. 'Eating Well. Tips for people with cancer and for their families.' by the Anti-Cancer Council of Victoria, Australia.
5. 'What to eat when you don't feel like eating' by James Haller, Robert Pope Foundation, Hantsport, Nova Scotia.

For more information on cancer, please call the

Cancer Helpline at Tel: 6225 5655
or email cancerhelpline@nccs.com.sg

MONDAYS - FRIDAYS : 8.30am to 5.30pm

SATURDAYS, SUNDAYS : CLOSED (Please leave a message)
& PUBLIC HOLIDAYS

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THIS IS A PUBLIC EDUCATION INITIATIVE BY:

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Division of Supportive and Palliative Care

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