

Moving oncology care forward so that you can look forward to life's moments

Healthy eating habits to follow during your cancer treatment journey



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A healthy diet is important, especially when you are diagnosed with cancer. Cancer as a health condition itself as well as the related treatment can affect the way your body tolerates food as well as the use and need for nutrients. Nutritional requirements may also vary among individuals and therefore it's important that you consult a dietitian when you start your cancer treatment journey.

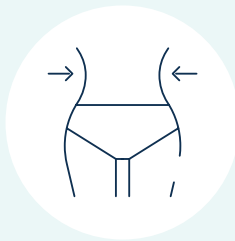
How following healthy eating affects your cancer treatment journey:



You may feel better physically, helping you to tolerate sometimes difficult cancer treatments



Your energy and strength may be preserved during treatment



You may avoid losing excessive weight and muscle (prevention of muscle wasting)



You may tolerate treatment-related side-effects better



You may maintain a stronger immunity against certain infections



You may heal and recover faster from your cancer treatment



You may be more compliant with cancer treatment



Your cancer treatment may result in a better prognosis and health outcomes



You may have less frequent and shorter hospital stays



You may have a decreased risk of bone fractures



You can maintain greater independence

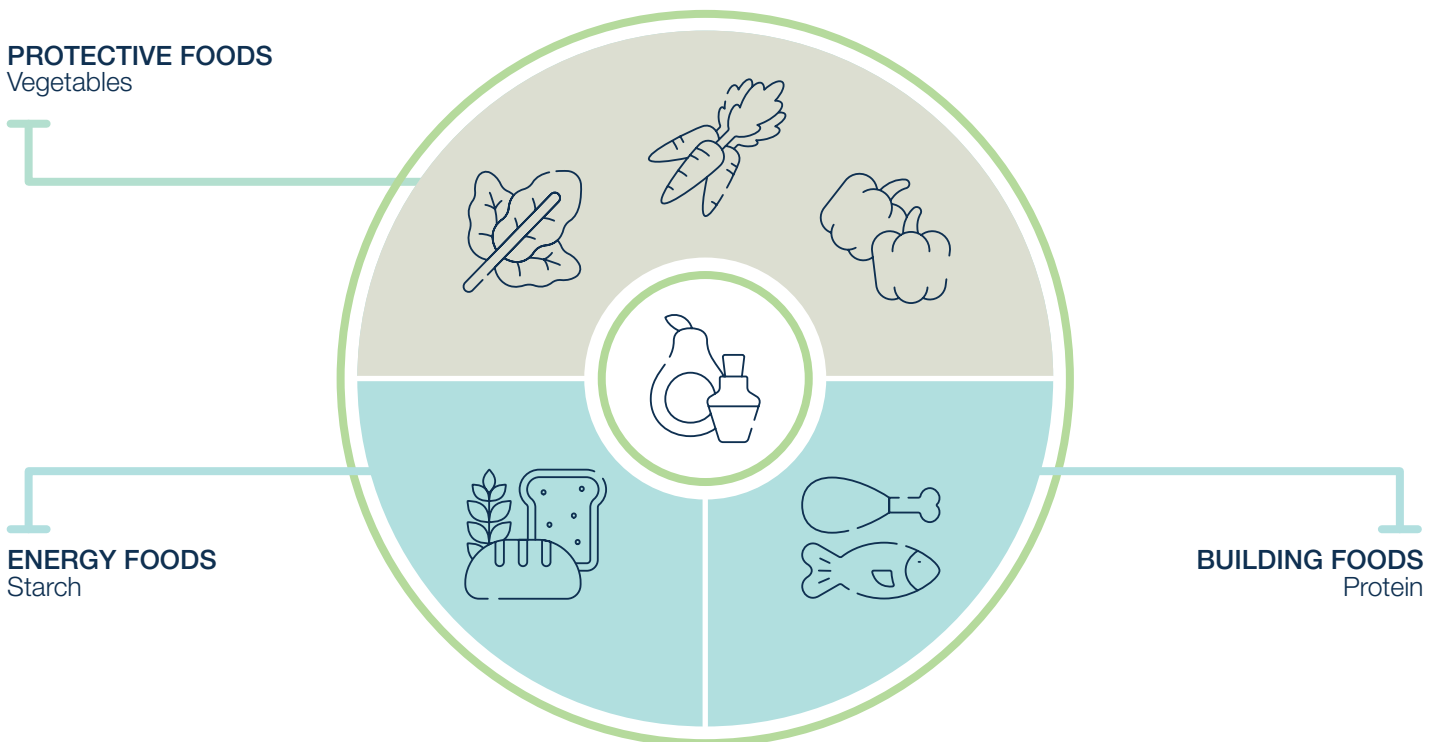


Eating well may improve your stress levels and reaction to stressors

Eating healthy during your cancer treatment journey

A variety of foods in adequate amounts can prevent muscle loss and help you maintain optimal health. A healthy meal consists of three categories of food in the right proportions namely: building foods (protein), energy foods (starch, sugar and fats) and protective foods (fruits and vegetables). It is suggested that each meal should consist of half a plate of non-starchy vegetables (vegetables that are low in starch) or one portion of fruit, a quarter plate of protein, a quarter plate of starch and one portion of fat (the size of the tip of your thumb). If a large meal is overwhelming for you, we recommend that you have 5-6 smaller meals instead of three large meals per day.

Healthy eating portion plate



You need energy from your diet for daily activities and to maintain normal bodily functions and processes. Adequate energy intake is necessary to prevent your body from breaking down your muscles for energy, therefore preventing muscle wasting. Muscle wasting in persons receiving cancer treatment is associated with poor health outcomes and decreased treatment tolerance. Starchy foods, sugar and fats are good sources of energy.

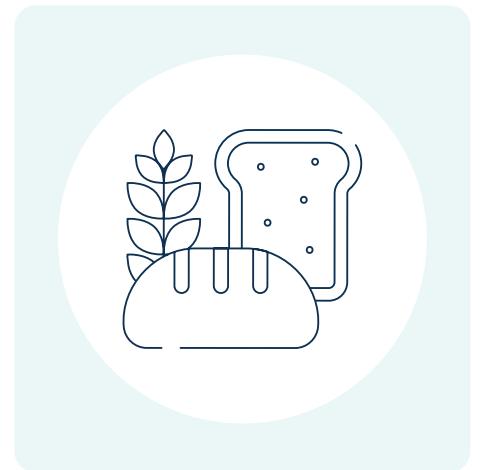
/ Starch

What is starch?

Starchy foods are the main source of carbohydrates in our diet. Our body easily breaks down carbohydrates into glucose, which gives us energy.

Why should we include starch in our diets?

We should eat starchy foods every day as part of a healthy and balanced diet as it is the main source of energy, and provide us with calcium, iron, B vitamins and fibre.



Starchy food sources:

You should include a variety of starchy foods in your diet. Starchy food sources include:

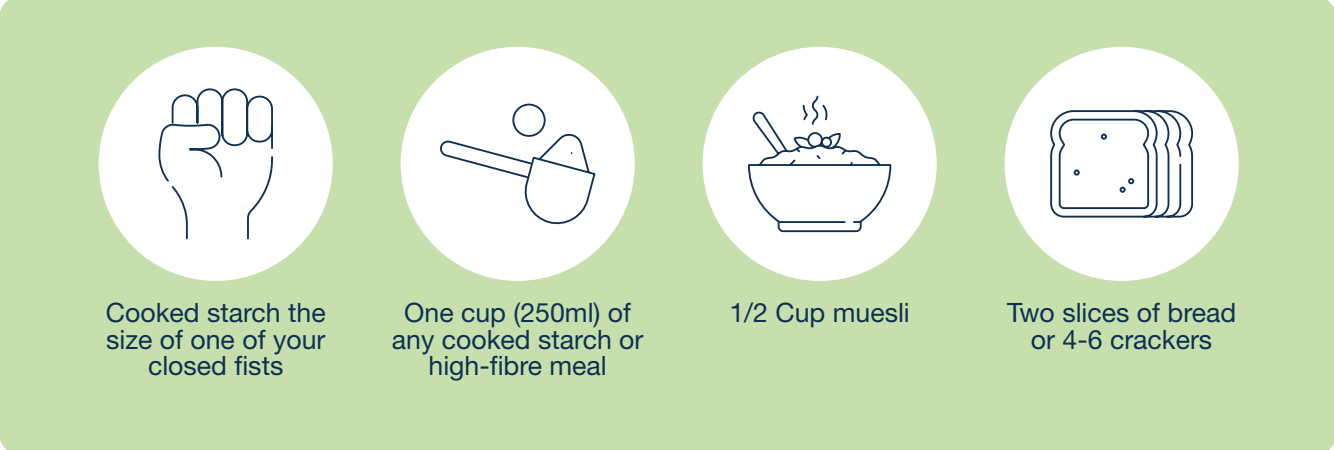
- Foods made from wheat, rice, oats, cornmeal, barley, rye, sorghum or another cereal grain e.g., bread, rice, pasta, couscous, quinoa, cereals, popcorn, oats, tortillas, crackers, mealie meal (pap/porridge), mabele porridge.
- Vegetables containing high amounts of carbohydrates e.g. butternut, potatoes, sweet potatoes, and corn.

Starch: whole-grain vs refined grains

Where you can, choose whole-grain starchy foods and eat the skin of potatoes and sweet potatoes, as it is a good source of fibre. Whole-grain starchy foods include whole-grain bread / crackers / cereals, brown/wild rice, whole-wheat pasta, couscous, quinoa, oats / oat bran, mealie meal (pap), sorghum (mabele porridge) pearly barley, bulgur wheat, and popcorn. Limit refined grains or products made with refined wheat flour e.g. white bread / rolls, muffins, white rice, refined cereals, samp etc. as these food sources are lower in fibre.

Starchy food portion sizes:

A quarter of your plate should consist of starchy foods. This can include any of the following:



Cooked starch the size of one of your closed fists

One cup (250ml) of any cooked starch or high-fibre meal

1/2 Cup muesli

Two slices of bread or 4-6 crackers

Starchy foods and fibre

Dietary fibre, often called roughage or bulk, is the part of plant-based food products that the body cannot break down or absorb, and when consumed it just passes (relatively intact) through your digestive tract. Whole-grain starchy food, fruits, vegetables and legumes (beans, peas and lentils) are good sources of dietary fibre.

There are two types of fibres namely: insoluble and soluble fibres. Our bodies need both. Soluble fibre dissolves in water to form a gel-like material that adds bulk to your stools. It also acts as a natural stool softener that makes bowel movements easier and more comfortable to pass. If you have diarrhoea, soluble fibre absorbs fluids and thus lessens diarrhoea. Soluble fibre can also help to regulate your cholesterol and sugar levels. Good food sources of soluble fibre include:

Oats / oatmeal, barley, nuts, white-flour products (white bread, bagels and pasta), white rice, corn, natural applesauce (no sugar added), pears, apricots, legumes (beans, peas and lentils), and potatoes (peeled).

Insoluble fibre promotes the movement of dietary material through your digestive tract and increases your stool bulk. Therefore it helps those who struggle with constipation or irregular bowel movements. Good sources of insoluble fibre include:

Whole grain starchy foods and starchy vegetables: whole-grain bread / crackers / cereals, brown / wild rice, whole-wheat pasta, couscous, quinoa, oats / oat bran, mealie meal (pap), sorghum (mabele) pearly barley, bulgur wheat, popcorn, potatoes (with skin on), and legumes (beans, peas and lentils).

Plant-based proteins: nuts and seeds.

Vegetables: raw cauliflower, green beans. The skin of fruits and vegetables is high in insoluble fibre.

Food sources high in both insoluble and soluble fibre include legumes (beans, peas and lentils). It is important to note that for optimal health over the long term, we need both soluble and insoluble fibre. However, in the case you experience diarrhoea a diet containing only soluble fibre is the best, whereas, with constipation, you need both soluble and insoluble fibre to improve symptoms.

2 Sugar

What is sugar?

Sugar is a simple form of carbohydrate and provides you with the immediate energy required for your daily activities. Sugar occurs naturally in some foods such as lactose (sugar in dairy products), fructose (sugar in fruits) and also in table sugar namely sucrose.

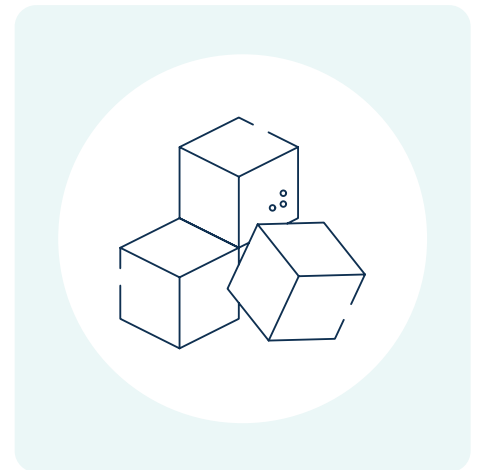
Free sugars vs non-free sugars

A high intake of sugar can cause weight gain and tooth decay. The type of sugar consumed too much is free sugars. You should limit your intake of free sugar.

This includes the following foods and drinks:

- Any sugars added by yourself or a manufacturer to foods and drinks and including sugars added in sweets, biscuits, chocolate, flavoured yoghurts, breakfast cereals and fizzy drinks.
- Sugars in honey, syrups, fruit juices and table sugar

Sugars that occur naturally in dairy products (milk) and fresh fruits and vegetables do not count as free sugars.



3 Fats

What is fat?

The building blocks of fats and oils are fatty acids, which are a rich energy source for your body. Fats and oils contain the most energy per gram compared to protein and carbohydrates. This means that you only need small amounts of fats and oils to provide you with lots of energy.

Why are fats important in our diets?

Small amounts of fats and oil play an important role in nutrition and form part of a healthy, balanced diet. Fats and oils have the following functions:

- Your body breaks down fats and oils to provide you with energy.
- Unused energy from fats and oils is stored as body fat and insulates your body and protects your organs.
- Fats and oils are needed to absorb and transport fat-soluble vitamins (vitamins A, D, E and K).

Types of fats:

There are four major types of fats and oils namely: unsaturated fats (monounsaturated and polyunsaturated fats), saturated fats and trans-fats. Limit saturated fats and trans-fats in your diet as they have negative effects on your cholesterol and cardiovascular health. Rather incorporate small amounts of unsaturated fats in your diet.

Unsaturated fats:

Unsaturated fats (monounsaturated and polyunsaturated fats) are found in various types of foods, but especially in plant-based food sources. It is usually liquid at room temperature. The following are food sources high in unsaturated fats:

Monounsaturated fats

The following are food sources high in monounsaturated fat:



Vegetables oils:
olive, canola, peanut
sunflower and
safflower oils



Avocados



Peanut butter



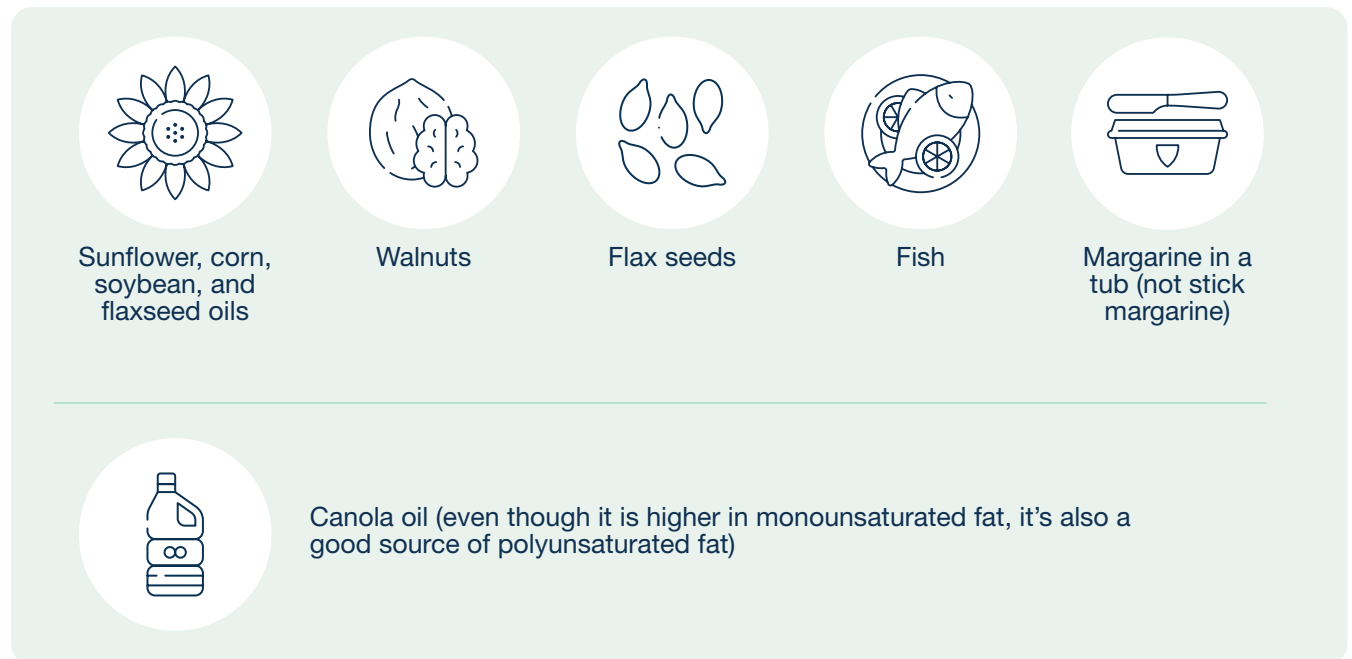
Nuts: almonds,
peanuts



Olives

Polyunsaturated fats

The following are food sources high in polyunsaturated fat:



Sunflower, corn, soybean, and flaxseed oils

Walnuts

Flax seeds

Fish

Margarine in a tub (not stick margarine)

Canola oil (even though it is higher in monounsaturated fat, it's also a good source of polyunsaturated fat)

Saturated fats

Saturated fats are found in various types of foods, but especially in animal sources. It is usually solid at room temperature. The following are food sources high in saturated fat:



Fatty cuts of meat

Meat products e.g. sausages and pies

Butter, ghee, lard

Cream, soured cream, ice cream, milkshakes

Full-cream milk, and reduced-fat milk

Biscuits, cakes and pastries

Some microwaveable popcorn

Palm oil

Coconut oil and coconut cream

Cheese

Trans-fats

Trans-fats are naturally found at low levels in some foods such as dairy and meat products. Trans-fats are also formed when vegetable oils are processed into solids.

The following are food sources high in trans-fats:

- Commercial baked goods: cakes, pie crusts, biscuits, cookies, crackers
- Frozen pizza
- Stick margarine
- Shortening
- Refrigerated doughs e.g. biscuits and rolls
- Fried foods e.g. French fries, doughnuts, fried chicken
- Non-dairy coffee creamer
- Small amounts of trans fats occur naturally in some meat and dairy (milk and cheese) products, including beef, lamb and butterfat

Fats and oils portion sizes

Fats and oils are very energy dense and therefore you only need small amounts in your diet. Consuming large amounts of fats can result in weight gain or being overweight.

Include healthy fats from plants (unsaturated fats) on a daily basis in your diet, and prepare food by using healthy cooking methods e.g. grill, bake, steam, poach, microwave, pressure cook or boil your food, instead of frying it. Remove fat from meat and chicken skin before cooking it.

The following are recommended portion sizes per meal:

- Eat any fat the size of the tip of your thumb (top of your thumb to your knuckle) e.g. margarine in tubs not stick margarine, peanut butter
- ½ A small avocado
- Nuts (6-8 nuts)
- Olives (5-6 olives)
- 1 Teaspoon of fat per person when cooking stews or curries
- 1 Teaspoon of olive oil, avocado oil, and canola oil (all unsaturated oils and fats)
- 1 Tablespoon of seeds e.g. sunflower seeds, sesame seeds, pumpkin seeds

4 Building Foods

What is protein?

Protein is a nutrient made up of amino acids and is an important component of every cell in your body. Incorporating adequate amounts of protein in your diet is crucial, as it is essential for building and repairing tissues and for the body to function properly.

Why is protein important?

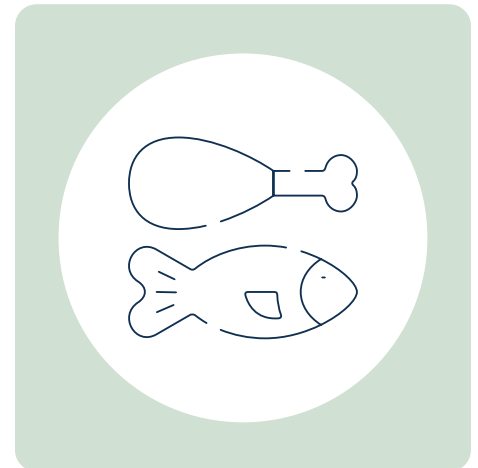
There are many reasons why protein is important in your diet. Here are a few roles that protein play:

- It builds and maintains the muscles in your body. This includes your organs e.g. heart and liver
- It helps build and repair tissues e.g. skin, bones, cartilage and blood.
- It plays a role in hormone and enzyme production, which is necessary for the regulation of various processes in your body e.g. regulation of your blood sugar levels.

What food sources are high in protein?

Protein is found in both animal and plant-based food sources. As mentioned above amino acids are building blocks of protein. Your body can make most amino acids, however, there are nine amino acids that you need to obtain through your diet. These are referred to as essential amino acids and include the following: histidine, isoleucine, leucine, lysine, methionine, phenylalanine, threonine, tryptophan and valine. Animal protein is a complete protein and thus contains adequate amounts of all nine essential amino acids your body needs. Animal protein food sources are also easier to break down and use by your body compared to plant-based protein.

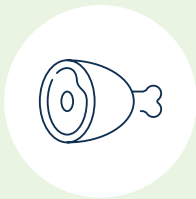
Soy (includes tofu, tempeh, and edamame) is a complete plant-based protein, and thus a good source of protein. However, most plant-based protein sources are incomplete proteins, as they are too low in or missing one or more of the nine essential amino acids. Even though plant-based proteins contain different amounts of amino acids, you will still be able to get enough of each essential amino acid by eating a wide variety of foods and combining complementary plant proteins throughout the day. Complementary proteins are an integral part of vegetarians, vegans and people who choose to eat minimal amounts of animal products diets, to ensure their daily protein intake is adequate.



Eating healthy during your cancer treatment journey

Refer to Table 1 for complementary high-protein foods suggestions that, when eaten together, provide you with adequate amounts of the essential amino acids. You do not necessarily need to eat these foods together in one meal, but they should be eaten within the same day.

Animal protein sources



Meat: beef, pork,
lamb, chicken,
turkey



Fish: sardines,
tuna, trout,
salmon



Dairy products:
milk, yoghurt,
cheese



Eggs

Plant-based protein sources



Legumes: lentils,
beans, peas,
peanuts



Nuts and seeds: almonds,
pistachio nuts, chia seeds,
sunflower seeds



Nut butters e.g. peanut
butter, macadamia butter

Table 1: Complementary plant-based proteins:

Combinations	Examples
Grains and legumes (beans, peas, lentils)	<ul style="list-style-type: none"> ■ Rice and beans (e.g. kidney beans) ■ Pea soup and toast ■ Lentil curry and rice ■ Peanut butter sandwich
Grains and dairy	<ul style="list-style-type: none"> ■ Pasta and cheese ■ Rice pudding ■ Cheese sandwich
Legumes (beans, peas, lentils) and nuts / seeds	<ul style="list-style-type: none"> ■ Hummus as a dip ■ Falafel ■ Legumes and nuts / seeds in soups

Protein portions sizes:

Include a portion of protein with every meal. One portion of protein is the size of a quarter of your plate or the size of your hand's palm, with the same thickness as your baby finger. A portion size of cheese is 30g (the size of a matchbox).

5 Protective Foods

Fruits and vegetables

Fruits and vegetables are referred to as protective foods as they are high in vitamins, minerals and fibre and play an important role in your immunity and gut health.

Fruits contain moderate to high amounts of carbohydrates and therefore provide us with energy. Vegetables can be divided into starchy vegetables and non-starchy vegetables. Starchy vegetables (potatoes, sweet potatoes, butternut, corn etc.) contain high amounts of carbohydrates, making them an essential energy foods group. Non-starchy vegetables are low in carbohydrates and energy and are included in the protective foods group, as their main functions are to optimise your immunity and ensure gut health.



Eating healthy during your cancer treatment journey

Fruits and non-starchy vegetables portion sizes:

Include one portion of fruit or half a plate of non-starchy vegetables in every meal.

Fruits portion sizes

Include a variety of fruits in your diet. Fruits can also be enjoyed as a snack between meals.

One portion of fruit is:

- 1 small apple, orange or pear (size of a tennis ball)
- 2 plums (size of two golf balls)
- 1 small banana
- ½ cup of fresh cut-up fruit
- 30g dried fruit (around two pieces)
- ½ cup 100% fruit juice (125ml)

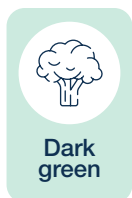
Non-starchy vegetable portion size

Include one portion of fruit or half a plate of non-starchy vegetables in every meal. Try to include a variety of non-starchy vegetables in your diet. Include non-starchy vegetables with different colours in your diet. Fresh, frozen and canned vegetables can be used.

Non-starchy vegetable sources by colour

Include one portion of fruit or half a plate of non-starchy vegetables in every meal. Try to include a variety of non-starchy vegetables in your diet. Include non-starchy vegetables with different colours in your diet. Fresh, frozen and canned vegetables can be used.

Non-starchy vegetable sources by colour



Baby marrow, broccoli, cucumber, gem squash, green beans, spinach, lettuce, collards, kale, turnip greens, and green herbs (e.g. parsley)



Beetroot, carrots, pumpkin, red peppers, and tomato



Cabbage, cauliflower, eggplant (brinjal), mushrooms, and onions

6 General healthy eating guidelines for persons during their cancer treatment journey:



Incorporate a wide variety of food from all food groups into your diet.



During cancer therapy, many people feel overwhelmed by a large plate of food. You can try having smaller meals more frequently e.g. 5-6 smaller meals / day instead of three large meals.



Try to eat food high in protein first and then those high in energy to ensure optimal muscle stores.



Achieve and maintain a healthy weight by being physically active and choosing healthy foods and drinks that meet your energy needs. Move when you can and prioritise your rest too.



If you have lost weight or are not eating as well as usual, you may need to incorporate more energy and high-protein food in your diet to prevent your body from breaking down your muscles for energy and to build muscles.



Have your largest meal when you feel the hungriest.



Keep your favourite food and beverages readily available.



Plan for days that you do not feel like cooking. Fill your freezer with your favourite frozen meals or reach out to a family member or friend to help with preparing meals.



Utilise online shopping platforms to deliver cooked meals. Most deliveries can be scheduled for a convenient time.



Limit your intake of fast food, processed meats, sweets and alcohol.

Eating healthy during your cancer treatment journey



Limit your intake of beverages containing high amounts of added sugar, with no nutritional value e.g. carbonated beverages.



Use healthy cooking methods to prepare your meals e.g boil, bake, or steam your food instead of deep frying it.



Check with your doctor or dietitian before taking vitamin or mineral supplements or making major changes to your diet.



Manage side-effects such as nausea and vomiting that may negatively impact on your eating habits.

Life Oncology units have multidisciplinary teams that can support you during your journey to recovery – this includes registered dietitians (RDs).

The following are some of the areas a registered dietitian can help you in:



Assess your nutritional status and your current dietary intake



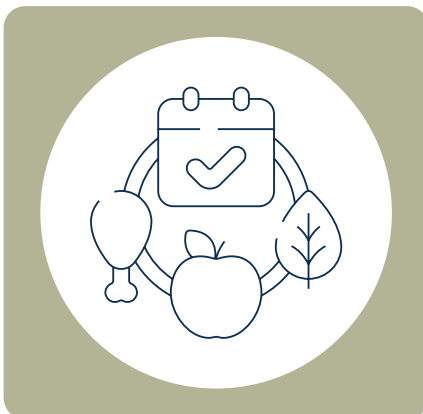
Provide you with an individualised meal plan for optimal nutrition



Recommend appropriate oral supplements to provide you with additional nutrients, including protein and energy when you are not meeting your nutritional needs through food alone



Provide you with guidelines on how to manage cancer treatment side effects that influence your dietary intake



If you need assistance with any of the above areas – ask your healthcare provider to refer you to a registered dietitian.

References

Australia's Cancer Council

<https://www.cancer.org.au/assets/pdf/nutrition-and-cancer-booklet>

CANSA: Cancer Association of South Africa

<https://cansa.org.za/files/2021/04/Fact-Sheet-on-Nutritional-Guidelines-for-Individuals-Undergoing-Cancer-Treatment-April-2021.pdf>

ASPEN: American Society of Parenteral and Enteral Nutrition

https://www.nutritioncare.org/uploadedFiles/Documents/Malnutrition/MAW_2020/Why%20Nutrition%20is%20Important_Adult%20Patient%20with%20Cancer.pdf

ASPEN: American Society of Parenteral and Enteral Nutrition

https://www.nutritioncare.org/uploadedFiles/Documents/Malnutrition/MAW_2021/Malnutrition%20Diagnosis-Documentation-Factsheet.pdf

Science Direct

<https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/essential-amino-acid>

Escott-Stump, S. (2015). Nutrician & Diagnosis-Related Care. China: Wolters Kluwer, 8th edition.

Mahan, L. K., Escott-Stump, S., & Raymond, J. L. (2012). St. Louis: Krause's Food and the Nutrician Care Process. Elsevier Saunders, 13th edition.

National Library of Medicine

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6723444/>

NHS UK

<https://www.nhs.uk/live-well/eat-well/food-types/starchy-foods-and-carbohydrates/>

National Library of Medicine

<https://pubmed.ncbi.nlm.nih.gov/19145965/#:~:text=Overall%2C%20soy%20is%20well%20tolerated,for%20higher%2Dfat%20animal%20products.>

Robert M. Kerr Food & Agricultural Products Center

<https://extension.okstate.edu/fact-sheets/print-publications/fapc-food-and-agricultural-products-center/fiber-bulk-of-life-fapc-132.pdf>

Accu-Check

<https://sweetlife.org.za/wp-content/uploads/2020/01/Healthy-Portion-Plate.pdf>

Mayo Clinic

<https://www.mayoclinic.org/healthy-lifestyle/nutrition-and-healthy-eating/in-depth/fiber/art-20043983>

Academy of Nutrition and Dietetics: Oncology Nutrition

<https://www.oncologynutrition.org/erfc/eating-well-when-unwell/chemotherapy/constipation-diarrhea-and-fiber>

NHS UK

<https://www.nhs.uk/live-well/eat-well/food-types/different-fats-nutrition/>

American Heart Association

<https://www.heart.org/en/healthy-living/healthy-eating/eat-smart/fats/trans-fat>

Mayo Clinic: Nutrition and healthy eating

<https://www.mayoclinic.org/healthy-lifestyle/nutrition-and-healthy-eating/in-depth/fat/art-20045550>

NHS UK

<https://www.nhs.uk/live-well/eat-well/food-types/how-does-sugar-in-our-diet-affect-our-health/>

www.lifehealthcare.co.za