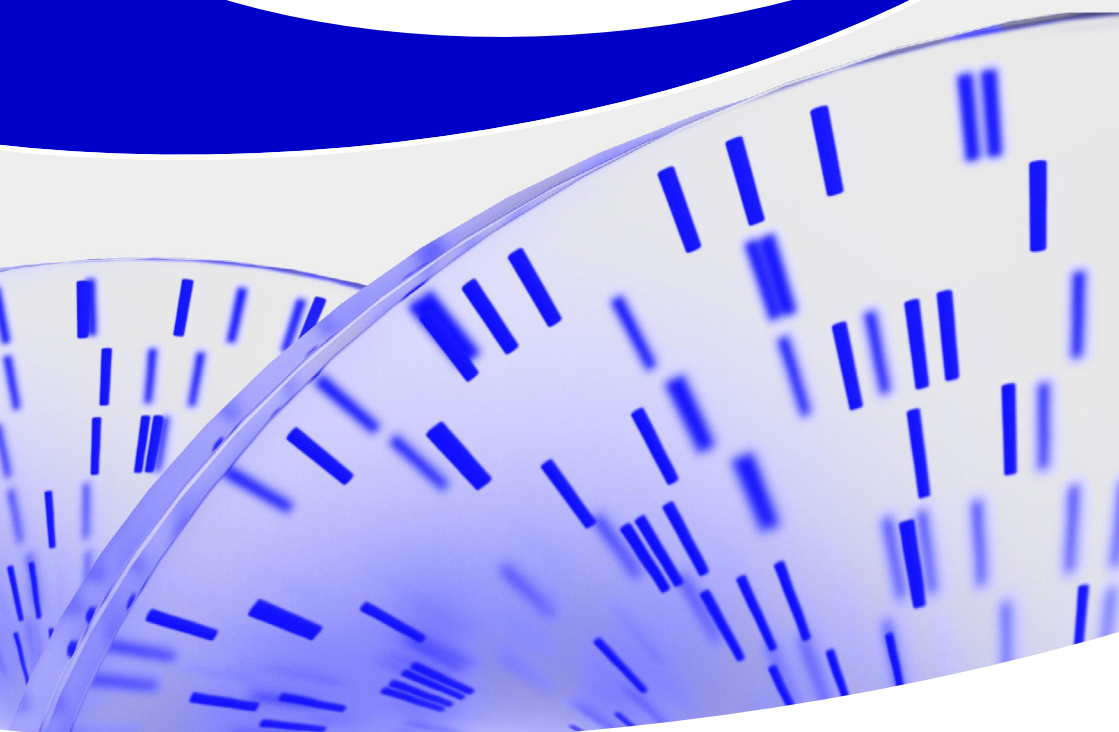


# coping with **CHEMOTHERAPY**





## Disclaimer

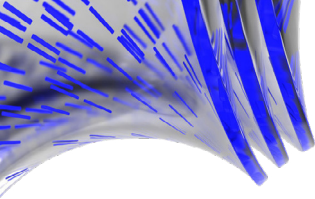
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# disclaimer



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# Introduction

This booklet has been prepared to help you understand more about chemotherapy, one of the main treatments for cancer. Chemotherapy uses a range of drugs to kill cancer cells or slow their growth.<sup>1</sup>

Many people feel concerned about the side effects of chemotherapy, but most side effects are temporary. We have included information about ways to manage the most common side effects.<sup>1</sup>

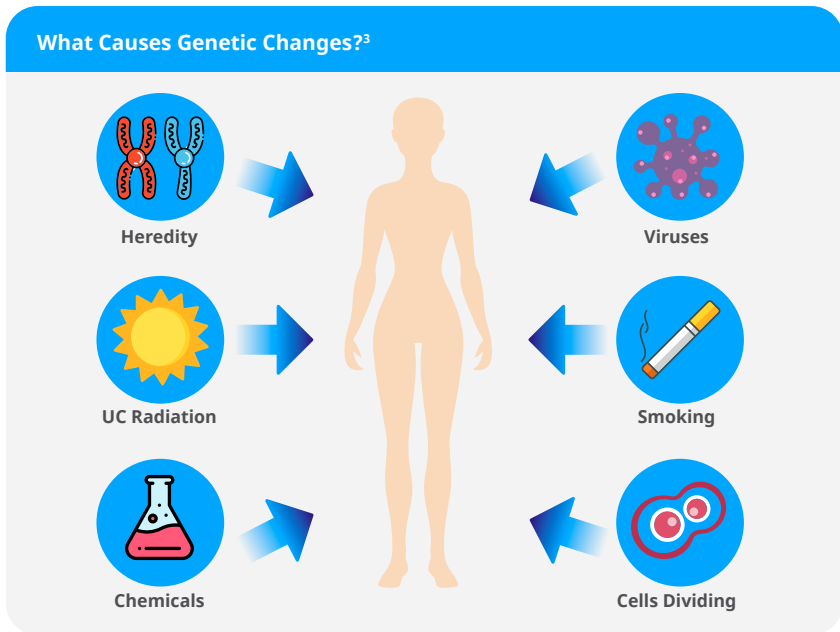
Whilst reading this booklet you should remember that it does not replace talking to your doctor, nurse or pharmacist or provide any guidance on your treatment. Your health care team is your best source of information, and you should always feel comfortable asking them any questions you have.<sup>1</sup>



# What causes Cancer?

Our bodies are made up of trillions of cells grouped to form tissues and organs. Genes inside the nucleus of each cell tell it when to grow, work, divide and die. Normally, our cells follow these instructions, and we stay healthy. But when there is a change in our DNA or damage to it, a gene can mutate.<sup>2</sup>

These gene mutations may be inherited, develop over time as we get older and genes wear out or develop if we are around something that damages our genes, like cigarette smoke, alcohol or ultraviolet (UV) radiation from the sun.<sup>2</sup>



*Adapted from National Cancer Institute, 2021<sup>3</sup>*

Gene mutations turn the cell from a normal cell into a cancer cell. A cancer cell does not act like a normal cell, it starts to grow and divide out of control instead of dying when it should.<sup>2</sup>

# What is Cancer?

Cancer is the abnormal division and reproduction of cells that can spread throughout the body. It is usually thought of as a single disease but consists of almost 100 disorders caused by nearly 300 different growths.<sup>4</sup>

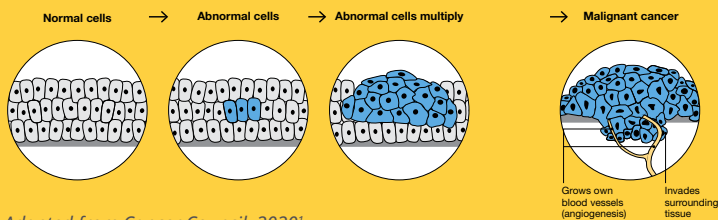
Some cancers grow and spread fast. Others grow more slowly. Some are more likely to spread to other parts of the body. Others tend to stay where they started.<sup>5</sup>

Cancer can develop anywhere in the body and is named for the part of the body where it started. For instance, breast cancer that starts in the breast is called metastatic breast cancer if it spreads to other parts of the body.<sup>5</sup>

As cancer cells divide, a tumour will develop and grow. As a tumour gets bigger, cancer cells can spread to surrounding tissues and structures by pushing on normal tissue beside the tumour. Cancer cells also make enzymes that break down normal cells and tissues as they grow. Cancer that grows into nearby tissue is called local invasion or invasive cancer.<sup>2</sup>

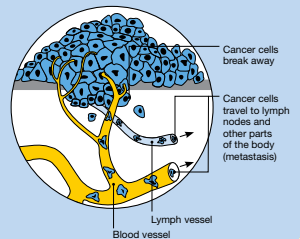
When cancer cells break away from a tumour, they can travel to other areas of the body through either the bloodstream or the lymph system. Cancer cells can travel through the bloodstream to reach distant organs. Most of the escaped cancer cells die or are killed before they can start growing somewhere else. But one or two might settle in a new area, begin to grow and form new tumours. This spread of cancer to a new part of the body is called metastasis.<sup>5</sup>

## How cancer starts<sup>1</sup>



Adapted from Cancer Council, 2020<sup>1</sup>

## How cancer spreads



**For many people, cancer can be treated successfully. In fact, more people than ever before lead full lives after cancer treatment.<sup>5</sup>**



# What is Chemotherapy?

By definition, “chemotherapy” refers to the use of any drug to treat any disease. Today, the word “chemotherapy”, or “chemo” for short, means drugs used for cancer treatment. Chemotherapy is considered a *systemic* treatment because the drugs travel throughout the body and can also kill cancer cells that have spread to parts of the body far away from the original tumour.<sup>6</sup>

Surgery and radiation are considered *local* treatments because they affect one part of the body. Surgery removes a tumour from the part of the body where cancer has been found, and radiation is aimed at a certain area of the body to kill or damage cancer cells.<sup>6</sup>

It is important to know that not all medicines and drugs to treat cancer work the same way. While traditional or standard chemotherapy is still an optimal option to treat many cancers, different kinds of drugs may work better for others.<sup>6</sup>

Cancer can be treated with a single drug, but often several drugs are used together. They may be given in a certain order or in certain combinations (called *combination* chemotherapy). Different drugs that work in different ways can work together to kill more cancer cells. This can also help lower the chance that the cancer may become resistant to any one drug.<sup>6</sup>







# Goals of chemotherapy?



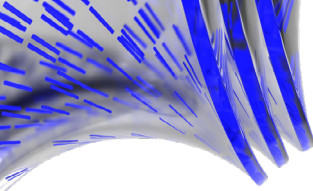
The goals of chemotherapy depend on the type of cancer and how far it has spread. Sometimes, the goal of treatment is to get rid of all the cancer and keep it from coming back.<sup>7</sup>

Doctors use chemotherapy in different ways at different times. These include:<sup>7</sup>

- Before surgery or radiation therapy: to shrink tumours. This is called *neoadjuvant* chemotherapy.
- After surgery or radiation therapy: to destroy any remaining cancer cells. This is called *adjuvant* chemotherapy.
- As the only treatment: to treat cancers of the blood or lymphatic system, such as leukaemia and lymphoma.
- For cancer that comes back after treatment, called *recurrent* cancer.
- For cancer that has spread to other parts of the body, called *metastatic* cancer.

If it is not possible to get rid of all the cancer, you might receive chemotherapy to delay or slow cancer growth which also helps to manage the symptoms caused by cancer. Chemotherapy given with the goal of delaying cancer growth is called palliative chemotherapy.<sup>7</sup>





# How are chemotherapy medicines given?

**Oral chemotherapy** is taken by mouth, you swallow the pill, capsule, or liquid. It is usually taken at home, therefore it is very important to make sure you know exactly how it should be taken.<sup>8</sup>

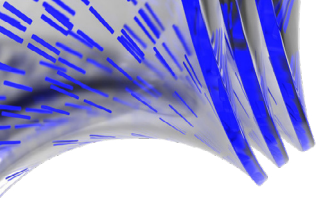
**Topical chemotherapy** is put directly on the skin in an area where certain cancers are. It can be a cream, gel, or ointment. Be sure you know the precautions you need to take when storing, handling, and disposing of the tube or container it comes in. You also need to take precautions when putting it on your skin, such as wearing special gloves.<sup>8</sup>

**Intravenous (IV) chemotherapy** is put into your bloodstream through a tiny, soft, plastic tube called a catheter. A needle is used to put the catheter into a vein in your forearm or hand; then the needle is taken out, leaving the catheter behind.<sup>9</sup>

IV drugs are delivered in these ways:<sup>9</sup>

- **IV push:** the drugs can be delivered through the catheter from a syringe over a few minutes.
- **IV infusion:** a mixed drug solution flows from a plastic bag through tubing that is attached to the catheter. The flow is usually controlled by a machine called an IV pump. A typical infusion can last from a few minutes to a few hours.
- **Continuous infusion:** This infusion can last anywhere from 1 to several days and are controlled by electronic IV pumps.





## What if you do not have good veins?

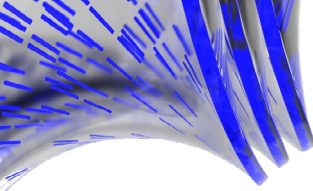
With ongoing chemotherapy, some find it difficult to find a suitable vein in their hand or arm to use for infusions or injections as the needles and catheters can scar and damage veins. One option that might be offered to patients who need chemotherapy for an extended period of time is a central venous catheter (CVC).<sup>9</sup>

A CVC is a bigger catheter that is put into a large vein in the chest or arm. Putting in the CVC requires a minor surgical procedure. Once a CVC is in place, you can get all your treatments through the CVC; receiving your chemotherapy and for other treatments that you might need such as fluids, blood transfusions, or antibiotics. It also allows for having your blood drawn for tests.<sup>9</sup>

Many people talk about CVC options with their doctor even before starting treatment. Your health care team can help you decide if you need a CVC and what type is right for you.<sup>9</sup>

Other ways to give chemotherapy infusions or injections:<sup>9</sup>

- **Intrathecal (IT) chemotherapy** is delivered through a needle placed in the spinal area or through a catheter into the spinal canal. It goes into the fluid that surrounds the brain and spinal cord, called the cerebrospinal fluid (CSF). This may be needed for certain kinds of cancers that affect the brain since most drugs delivered by IV or orally cannot reach the CSF as they cannot pass through the blood-brain barrier that protects the brain from toxins.
- **Intra-arterial chemotherapy** is injected directly into the main artery that supplies blood to the tumour. It might be used to treat a single area (such as the liver, arm or leg). This method helps the treatment be more specific to one area and can help limit the effect the drug has on other parts of the body.
- **Intracavitary chemotherapy** is delivered through a catheter into an enclosed area of the body such as the bladder (intravesicular), the abdomen or belly (intrapertoneal) or the chest (called intrapleural).
- **Intramuscular (IM) chemotherapy** is injected into a muscle.
- **Intralesional chemotherapy** is injected directly into a tumour if the tumour can be safely reached with a needle.



# How often / for how long is chemotherapy given?

Your doctor will choose the doses, how the drugs will be given, and how often and how long you'll get treatment. All of these decisions will depend on the type of cancer, where it is, how big it is, if it's spread to other parts of the body, and how it affects your normal body functions and overall health.<sup>6</sup>

Treatment schedules for chemotherapy vary widely. How often and how long you get chemotherapy depends on:

- Your type of cancer and how advanced it is
- Whether chemotherapy is used to:
  - Cure your cancer
  - Control its growth
  - Ease symptoms
- The type of chemotherapy you are getting
- How your body responds to the chemotherapy

You may receive chemotherapy in cycles. A cycle is a period of chemotherapy treatment followed by a period of rest. For instance, you might receive chemotherapy every day for 1 week followed by 3 weeks with no chemotherapy. These 4 weeks make up one cycle. The rest period gives your body a chance to recover and build new healthy cells.<sup>33</sup>





# Taking other medicines while on chemotherapy

If you're already taking medications for other medical reasons, it is important that you're familiar with each of your medications and know why you're taking them. It will be helpful to have a plan to help organize and properly manage all of these medications.<sup>10</sup>

Before starting chemotherapy, make a list of all of your medications prescribed by your oncologist, along with the medications you're already taking for other health conditions. Include vitamins, herbal supplements, over the counter medications and even anything you take just now and then like paracetamol or aspirin. Include doses and frequency or directions and update it regularly so that you can refer to it as you continue your treatment.<sup>10</sup>

It is also a good idea to use just one pharmacy for all of your prescriptions. This way your pharmacy can have a complete record of all of your medications and will be alerted to any possible drug interactions.<sup>10</sup>

Make sure you communicate any allergies to your health care team.<sup>10</sup>



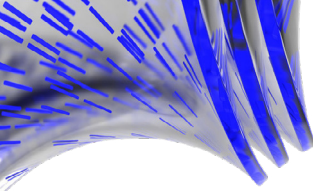


# Side-effects of chemotherapy

The drugs used for chemotherapy are powerful and can still cause damage to healthy cells. This damage causes the side effects that are linked with chemotherapy.<sup>7</sup> Side effects are not always as bad as you might expect, but it's normal to worry about this part of cancer treatment. While side effects can be unpleasant, they must be weighed against the need to kill the cancer cells.<sup>11</sup>

The normal cells most likely to be damaged by chemotherapy are blood-forming cells in the bone marrow, hair follicles, cells in the mouth, digestive tract, and reproductive system. As a result, the most common side effects are:<sup>11</sup>

- Appetite changes
- Nausea and vomiting
- Weight changes
- Diarrhoea
- Constipation
- Fatigue
- Mouth, tongue, and throat problems such as sores and pain with swallowing
- Anaemia (low red blood cell counts)
- Easy bruising and bleeding Infection
- Peripheral neuropathy or other nerve problems, such as numbness, tingling, and pain
- Hair loss
- Skin and nail changes such as dry skin and colour change
- Urine and bladder changes and kidney problems
- Chemotherapy brain, which can affect concentration and focus
- Mood changes
- Changes in libido and sexual function
- Fertility problems



# Managing side-effects of chemotherapy

Doctors try to give chemotherapy at levels high enough to treat cancer, while keeping side effects at a minimum. The severity of side effects varies from person to person. Talk to your health care team about the side effects that are most common with your treatment. You can take medicines to help protect your body's normal cells. There are also treatments to help relieve side effects.<sup>11</sup>

It is important to keep track of any side effects that you are having so your health care team can help you manage these.<sup>12</sup>

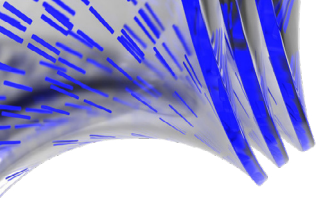
## Appetite Loss

Appetite loss or poor appetite are common side effects of chemotherapy. This means that you may eat less than usual, not feel hungry at all, or feel full after eating only a small amount.<sup>13</sup>

Ongoing appetite loss may lead to serious complications. These include weight loss, not getting the nutrients that the body needs, and fatigue and weakness from muscle loss. These issues can slow recovery and lead to breaks in treatment.<sup>13</sup>

If a tumour is in or around parts of the gastrointestinal (GI) tract, it might interfere with the intake of food as it may cause trouble swallowing or make a person feel full without even eating. Other side effects of cancer treatment that can cause appetite loss include:<sup>13</sup>

- Changes in taste and smell
- Nausea and vomiting
- Constipation or diarrhoea
- Fatigue
- Mouth sores
- Infections in the mouth
- Dry mouth
- Difficulty chewing and swallowing
- Pain
- Depression, stress or anxiety



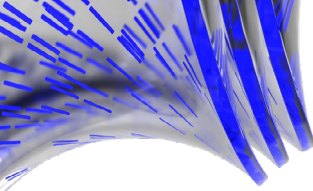
## Managing appetite loss

Relieving side effects is an important part of cancer care and treatment. This is called palliative care, or supportive care. If possible, the first step in treating appetite loss is to address the cause. Therefore, your cancer treatment is a key part of improving your loss of appetite. Treatment for conditions such as nausea, fatigue, pain, mouth sores, depression, stress or anxiety may help improve appetite.<sup>13</sup>

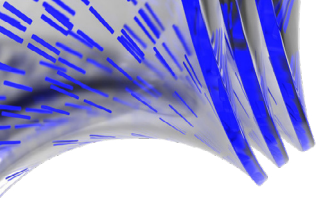
Consider the following suggestions for getting proper nutrition when your appetite is low:<sup>13</sup>

- Try light exercise, such as a 20-minute walk, about an hour before meals. This may help stimulate your appetite. Consult your health care team before starting an exercise program. Exercise also helps maintain muscle mass.
- If the smell or taste of food makes you nauseous, eat food that is cold or at room temperature. This will decrease its odour and reduce its taste.
- Drink fluids between meals, rather than with meals, which may make you feel full too quickly. If you can, drink fluids with additional calories, such as sports drinks with electrolytes.
- Choose nutritious or filling drinks, such as milk or nutritional milkshakes or smoothies.
- Meet with a registered dietitian for advice on meal planning and symptom management. A dietitian can also decide whether you might benefit from nutritional supplements or digestive enzymes.
- Do not limit how much you eat.
- Eat 5 to 6 small meals a day, and snack whenever you are hungry.
- Determine which times of day you are hungry and eat at those times.
- Eat nutritious snacks that are high in calories and protein. This includes dried fruits, nuts and nut butters, yogurt, cheeses, eggs, milkshakes, ice cream, cereal, pudding, and protein bars or granola bars.



- 
- Carry a snack bag with you and keep your favourite foods on hand for snacking.
  - Increase the calories and protein in foods by adding sauces, gravy, butter, cheese, sour cream, whipped cream, and nuts or nut butters.
  - Try placing food on smaller plates rather than larger plates.
  - Try to eat in pleasant surroundings and with family or friends.
  - If you are having trouble tasting food, try adding spices and condiments to make the foods more appealing.
  - If you have changes in taste, such as a metallic taste in your mouth, try sucking on hard candy such as mints or lemon drops before eating a meal.
  - Sometimes, a feeding tube is placed temporarily through the nose into the stomach. A more permanent tube can also be placed directly into the stomach (called a gastrostomy tube or G-tube) from the abdominal wall if necessary. Many times, however, this approach is not recommended.





## Nausea and Vomiting

Nausea and vomiting are common and sometimes serious side effects of chemotherapy. Nausea is feeling queasy, sick to your stomach, or like you might throw up. Vomiting is throwing up the food and liquid in your stomach.<sup>14</sup>

These symptoms can be mild or severe. Mild nausea and vomiting can be uncomfortable but does not usually harm your health. Vomiting a lot can cause other health problems, such as dehydration, weight loss, and fatigue.<sup>14</sup>

You may be more likely to experience nausea and vomiting during your cancer treatment if you:<sup>14</sup>

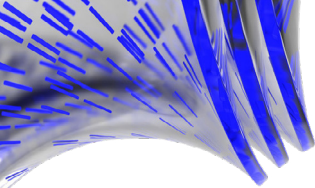
- Are female.
- Are younger than 50 years old.
- Have a history of morning sickness during pregnancy.
- Often experience anxiety or motion sickness.
- Experienced nausea and vomiting during previous therapies.

## Managing nausea and vomiting

Your doctor can prescribe medicine to prevent nausea and vomiting and to help relieve your symptoms. These types of medicines are called “antiemetics”.<sup>14</sup>

There are other ways to help relieve nausea, vomiting and maintain nutrition during treatment. The following suggestions may help:<sup>15</sup>

- Try to eat small meals or snacks throughout the day rather than 3 large meals. Make sure you eat on the days you get treatment. Most people find that a light meal or snack before treatment is best.
- Try foods and drinks that are “easy on the stomach”. Such as ginger ale, bland foods, sour candy, and dry crackers or toast.
- Eat foods that appeal to you and that are at a cold or at room temperature.
- Nutrition supplements are easy and can help during this time.
- Wear loose-fitting clothes.
- Limit sounds, sights, and smells that cause nausea and vomiting.
- Keep your mouth clean. Brush your teeth and rinse your mouth out every time you vomit.
- Talk to your doctor or nurse about hypnosis, biofeedback, or guided imagery.



## Diarrhoea

Diarrhoea is often a side effect of cancer treatment. Diarrhoea can also be a symptom of the cancer itself. Cancer that affects the pancreas, colorectal cancer, and neuroendocrine tumours in the gastrointestinal (GI) tract can all cause diarrhoea.<sup>16</sup>

Diarrhoea is frequent, loose, or watery bowel movements. Bowel movements are also called stools. Although mild diarrhoea can be unpleasant, it usually does not cause serious health problems. But severe diarrhoea can cause dehydration and electrolyte imbalances. This happens when your body loses too much water and important minerals. Diarrhoea that is not treated or managed well can lead to dehydration and malnutrition.<sup>16</sup>

### Managing diarrhoea

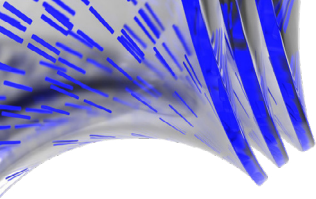
There are steps you can take to prevent diarrhoea or treat it before it causes other problems. Your treatment options depend on your symptoms and the cause of diarrhoea.<sup>16</sup>

If you have mild diarrhoea, the following suggestions may help:<sup>16</sup>

- Drink water and other clear liquids to prevent dehydration.
- Avoid caffeine, alcohol, dairy, fat, fibre, orange juice, prune juice, and spicy foods.
- Eat small meals. Choose foods that are easy to digest.
- If chemotherapy is causing diarrhoea, your doctor may recommend a low-residue diet. When you eat a low-residue diet, your body makes less stool. It includes low-fibre foods. These include bananas, rice, apple sauce, and toast.
- Avoid medication such as laxatives and stool softeners.
- Sometimes, doctors prescribe medicine to prevent nausea and vomiting from chemotherapy.

If you have severe diarrhoea or mild diarrhoea that does not improve, tell your health care team. Depending on your symptoms, your doctor may:<sup>16</sup>

- Check your electrolytes level.
- Give you fluids through an IV line that goes in a vein in your arm.
- Check for infection.
- Change your diarrhoea medication.
- Change the schedule or dose of chemotherapy.



Sometimes, the pancreas not working well can cause diarrhoea. This happens to some people with pancreatic cancer. If that is the case, replacing pancreatic enzymes that help digest food can help and may be a treatment option.<sup>16</sup>

## Constipation

Constipation happens when stools become less frequent, painful, or dry and difficult to pass. Constipation starts when the body absorbs more water or signals food to move through the bowels more slowly. It is a common but controllable symptom for people with cancer.<sup>17</sup>

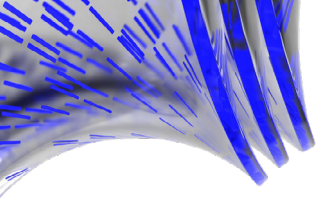
Common causes of constipation for everyone include:<sup>17</sup>

- Not eating enough food with fibre
- Not drinking enough water or other fluids
- Not exercising

For people with cancer, your treatment may be causing constipation. Pain medicine slows down muscles in your digestive tract, making it more difficult to pass your stool. Iron supplements, chemotherapy, and other drugs that are used to treat nausea, vomiting, seizures, depression, diarrhoea, or high blood pressure can also affect your digestion.<sup>17</sup>

In addition to not being able to empty the bowel, people with constipation may experience the following symptoms:<sup>17</sup>

- Pain and cramping
- Swelling in the abdomen
- Appetite loss
- Nausea and vomiting
- Not being able to urinate
- Confusion



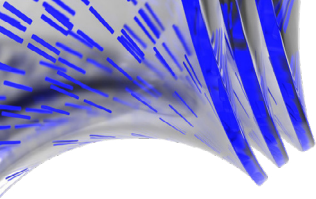
## Managing constipation

It is very important to treat constipation properly. Without treatment, constipation may damage your intestine or rectum. It can lead to dehydration, block your bowel, and may slow your body's absorption of medicine. If there is scar tissue or a tumour causing the problem, you may need to have more tests and treatment.<sup>17</sup>

Let your health care team know if you have had constipation for more than a couple of days. They will be able to help manage constipation. The following suggestions may help:<sup>1</sup>

- Eat more high-fibre foods, such as wholegrain bread and pasta, bran, fruits and vegetables, nuts and legumes (e.g. Baked beans or lentils).
- Drink plenty of fluids, both warm and cold. Prune, apple or pear juice can work well.
- Do some light exercise, such as walking.
- If you are having treatment for bowel cancer, ask your treatment team if there is any specific dietary advice about fibre you can follow to avoid constipation.
- Ask your doctor about using a laxative, stool softener or fibre supplement.
- Avoid enemas or suppositories as they may cause infection.





## Fatigue

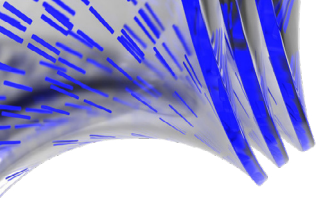
Fatigue is the most common side effect of chemotherapy. You may have muscle aches and pains, get worn out quickly, have difficulty concentrating or find it difficult to do daily activities. Fatigue can appear suddenly, and it doesn't always go away with rest or sleep. Fatigue may last for some weeks or months after a treatment cycle ends. Energy levels usually improve over time.<sup>1</sup>

### Managing fatigue

Setup and follow a structured daily routine, keeping as normal a level of activity as you can.<sup>18</sup>

The following suggestions may help:<sup>1,18</sup>

- Eat a healthy, well-balanced diet and don't skip meals. Limit your alcohol intake.<sup>1</sup> Avoid caffeine in drinks (like coffee, tea, or soda).<sup>18</sup>
- Allow your body to recover by taking regular breaks, resting or having a short sleep.<sup>1</sup>
- Do some regular exercise, such as walking. Moderate-intensity exercise can boost energy levels and make you feel less tired. Talk to your health care team about suitable activities for you.<sup>1</sup>
- Do not exercise too late in the evening as this may cause sleep problems.<sup>18</sup>
- Try to sleep 7 to 8 hours each night. Sleep experts tell us that having regular times to go to bed and get up helps us keep a healthy sleep routine.<sup>18</sup>
- Sleep therapy can also help you minimize sleep disturbances and learn improved sleep hygiene.<sup>18</sup>
- Find ways to manage anxiety or trouble sleeping as these can increase fatigue. Relaxation or meditation exercises may help improve your sleep or give you more energy.<sup>1</sup>
- Certain drugs used to treat other side effects can make a person feel fatigued. Talk with your health care team about this as changing to a different drug or dose can help.<sup>18</sup>



## Mouth Sores

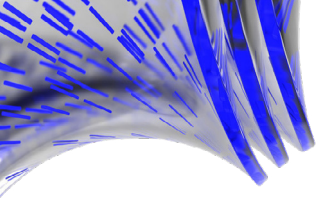
Mouth sores are areas that might look like little cuts or ulcers in the mouth (also known as mucositis or stomatitis). This is because certain kinds of cancer treatment can damage the cells that line the mouth, throat, and gastrointestinal (GI) tract. This causes sores or ulcers to develop in the affected areas. In some cases, the soreness and sores may extend into the throat and farther down into the gastrointestinal (GI) tract, making eating and swallowing painful.<sup>19</sup>

What to look for:<sup>19</sup>

- Sores in the mouth that may be red or may have small white patches in the middle. They may bleed or become infected.
- Swelling in the gums, mouth, or throat
- Pain or discomfort when you chew or swallow. This may also feel like a sore throat.
- Small ulcers, bleeding, or sores in the mouth, on gums, or on or under the tongue
- A white or yellow film, patches, or pus in the mouth or on the tongue
- Increased mucus in the mouth
- Feeling of dryness, mild burning, or pain when eating hot and cold foods
- Heartburn or indigestion

Mouth sores can appear 1 to 2 weeks after treatment starts and may come and go if treatment is given in cycles. Healing may take 2 to 4 weeks when treatment completely ends. Mouth sores can be very painful and lead to dehydration, poor eating, and weight loss.<sup>19</sup>





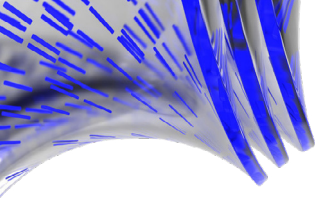
## Managing mouth sores

The best way to manage mouth sores is to prevent them or treat them early. If you are receiving chemotherapy, sucking on ice chips right before and during treatment may prevent mouth sores. You may be prescribed or given over-the-counter pain medicine.<sup>20</sup>

It is a good idea to take special care of your mouth during cancer treatment. The following suggestions may help:<sup>20</sup>

- Brush your teeth gently with fluoride toothpaste several times a day. If the mouth sores are severe, use an oral sponge on a stick, instead of a toothbrush.
- Floss gently.
- Avoid mouth rinses with alcohol in them.
- Rinse or gargle with a solution of saltwater and baking soda. Try mixing ½ teaspoon of salt plus ½ teaspoon of baking soda in a glass of water.
- Choose foods that require little or no chewing.
- Avoid acidic, spicy, salty, coarse, and dry foods.
- Try drinking through a straw to help avoid irritating your mouth sores.
- If you wear dentures, lessen the time that you wear them. Avoid wearing them at night and consider removing them between meals.





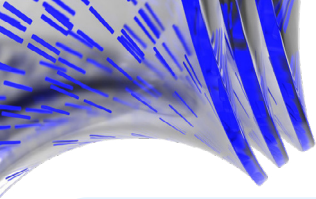
## Hair Loss

Hair is constantly growing, with old hairs falling out and being replaced by new ones. Chemotherapy drugs often damage hair follicles, making hair fall out. Some chemotherapy drugs can cause hair thinning or hair loss only on the scalp. Others can also cause the thinning or loss of pubic hair, arm and leg hair, eyebrows, or eyelashes. Hair loss most often begins within 2 weeks of starting treatment and gets worse 1 to 2 months after therapy starts, but hair often starts to grow back even before treatment ends.<sup>21</sup>

### Managing hair loss

Before and while your hair is falling out, your scalp may feel hot, itchy, tender or tingly. Some people find that their scalp is extra sensitive, and they may develop pimples on their scalp.<sup>1</sup> It is normal to feel upset about losing your hair. It helps to know that hair grows back, and you can take steps to make hair loss less of a problem for you.<sup>21</sup> The following suggestions may help:<sup>1,21</sup>

- Talk to your health care team about the benefits, limits, and side effects of cooling caps. There are some side effects of cooling caps to consider, such as headaches, scalp pain, and neck and shoulder discomfort.<sup>21</sup>
- Be gentle when brushing and washing your hair. Using a wide-toothed comb may help. Hair loss might be somewhat reduced by avoiding too much brushing or pulling (which can happen when making braids or ponytails, using rollers, blow-drying, or using curling or flat irons).<sup>21</sup>
- Keep your hair and scalp very clean. Use a mild shampoo like baby shampoo.<sup>1</sup>
- Cut your hair, especially if it is long before it falls out. Some people say this gives them a sense of control.<sup>1</sup>
- Wear a wig, hat, turban or scarf, or go bare-headed – whatever feels best to you. If you prefer to leave your head bare, protect it against sunburn and the cold.<sup>1</sup> Use a broad-spectrum sunscreen with an SPF of at least 30 and wear a hat. In cold weather, wear a hat or scarf to cover your head and stay warm.<sup>21</sup>



- Use a cotton, polyester or satin pillowcase, as nylon can irritate your scalp. Wear a light cotton turban or beanie to bed if you are cold.<sup>1</sup>
- When new hair starts to grow, it may break easily at first. Avoid perms and dyes for the first few months. Keep hair short and easy to style.<sup>21</sup>

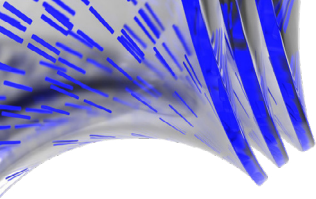
## Skin and nail changes

Some chemotherapy drugs may cause your skin to peel, darken or become dry and itchy. During treatment and for several months afterwards, your skin is likely to be more sensitive to the sun. You may find your nails also change and become darker than usual or develop ridges or white lines across them. Your nails may also become brittle and dry or lift off the nail bed. These changes usually grow out.<sup>1</sup>

## Managing skin and nail changes

The following suggestions may help when taking care of your skin:<sup>1,22</sup>

- Wear loose, non-restricting clothing. Choose cotton fabric instead of rough wool or synthetic fibres.<sup>1</sup>
- Drink plenty of water and other fluids.<sup>22</sup>
- Get enough rest. Ask about medicine (antihistamines) if itching keeps you awake.<sup>22</sup>
- Bathe in warm water instead of hot. Add baking soda, oatmeal (in a cloth or mesh bag), or bath oil to your bathwater.<sup>22</sup>
- Wash your skin gently using a mild, unscented soap and a soft washcloth.<sup>22</sup>
- Gently pat your skin dry with a towel rather than rubbing it.<sup>1</sup>
- Avoid using scented or alcohol-based products on the skin (such as powders, after-shaves, or perfumes).<sup>22</sup>
- Keep your room cool (15°C to 20°C) and well ventilated to avoid sweating.<sup>22</sup>
- Use a moisturising lotion or cream containing the ingredient urea to help with the dryness.<sup>1</sup>



- Protect your skin from the sun when UV levels are 3 or above. Wear high-protection sunscreen (SPF 30+), a broad-brimmed hat, protective clothing, sunglasses, and try to stay in the shade.<sup>1</sup>
- Use mild detergent to wash your clothing.<sup>1</sup>
- Avoid chlorinated swimming pools as the water can make skin changes worse.<sup>1</sup>
- Don't shave or wax until your skin is healed.<sup>1</sup> Use an electric razor rather than a blade to avoid cuts and irritation.<sup>22</sup>

For minor, non-painful nail changes, the following might be helpful:<sup>23</sup>

- Check your hands and feet every day to look for changes in your nails.
- Keep your nails trimmed short. Short nails are less likely to break or get caught.
- Keep your nails clean to avoid infections.
- Protect your hands when putting them in water (such as washing dishes), gardening, or cleaning. Wear work gloves when doing these tasks to protect your nails
- Do not get professional manicures while you are getting treatment for cancer.
- Wear loose-fitting shoes.
- Use a water-soluble nail lacquer on nails that have ridges, are delicate, or are splitting, to strengthen and protect them.
- Ask your doctor if it is safe for you to take biotin (a dietary supplement) to strengthen your nails.





## Hand-foot Syndrome

Some cancer drugs affect the growth of skin cells or small blood vessels. This causes hand-foot syndrome which happens on the palms of the hands and/or the soles of the feet. Sometimes other areas of skin are affected, such as the knees or elbows but this is less common.<sup>24</sup>

Symptoms of mild or moderate hand-foot syndrome include:<sup>24</sup>

- Redness similar to a sunburn
- Swelling
- A feeling of tingling or burning
- Tenderness or sensitivity to touch
- Tightness of the skin
- Thick calluses and blisters on the palms of your hands and soles of your feet

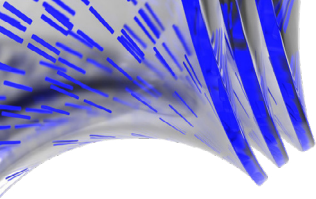
Symptoms of severe hand-foot syndrome include:<sup>24</sup>

- Cracked, flaking, or peeling skin
- Blisters, ulcers, or sores on the skin
- Severe pain
- Difficulty walking or using your hands

## Managing hand-foot syndrome

With chemotherapy, hand-foot syndrome usually appears after 2 to 3 months. The following suggestions may help:<sup>24</sup>

- Limit the use of hot water on your hands and feet when washing dishes or bathing. Take cool showers or baths. Carefully pat your skin dry after washing or bathing.
- Gently apply skincare creams to keep your hands moist. Avoid rubbing or massaging lotion into your hands and feet. This type of movement can create friction.



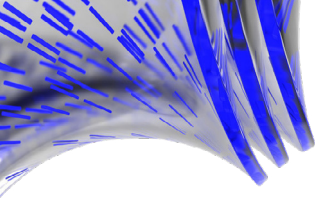
- Try not to walk barefoot. Use soft slippers and thick socks to reduce friction on your feet.
- Wear loose-fitting, well-ventilated shoes and clothes so air can move freely against your skin.
- Avoid contact with harsh chemicals used in detergents or cleaning products.
- Avoid activities that cause force or rubbing on the hands or feet. This includes jogging, aerobics, and racquet sports.
- Avoid using tools or household items that require you to press your hand against a hard surface. Examples include garden tools, knives, and screwdrivers.



The following options can be used to treat hand-foot syndrome:<sup>24</sup>

- Topical pain relievers. These are used as a cream or a patch over painful areas in the palms and soles.
- Topical moisturizing exfoliant creams are available, either over the counter or through your doctor.
- Pain relievers.

Your doctor may lower your chemotherapy dose, change your chemotherapy schedule or temporarily stop your chemotherapy until the symptoms of hand-foot syndrome get better.<sup>24</sup>



## Nerve Related Pain

Some chemotherapy drugs can damage the nerves that send signals between the central nervous system and the arms and legs. This is called peripheral neuropathy.<sup>1</sup>

Symptoms include any of these sensations in your hands or feet:<sup>25</sup>

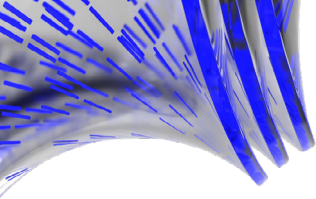
- Tingling (or a “pins and needles” feeling)
- Burning or warm feeling
- Numbness
- Weakness
- Discomfort or pain
- Decrease in ability to feel hot and cold
- Cramps (in your feet)

## Managing nerve related pain

It is a common problem for some people that may last for weeks, months, or even years after treatment is done. There are things you can do to manage your symptoms. The following suggestions may help:<sup>25</sup>

- Take pain medicines as your doctor prescribed them. Most pain medicines work best if they are taken before the pain gets bad.
- Do not drink alcohol.
- If you have diabetes, control your blood sugar to help prevent more damage to nerves.
- Protect your hands by wearing gloves when you clean, work outdoors or do repairs.
- Take care of your feet. Look at them once a day to see if you have any injuries or open sores.
- Always wear shoes that cover your whole foot when walking even at home.





- Prevent injuries and avoid things that seem to make your symptoms worse, such as touching hot or cold items with your bare hands and feet or wearing clothes or shoes that are too snug.
- Be sure that you have ways to support yourself if you have problems with stumbling while walking. Handrails in hallways and bathrooms may help you keep your balance. A walker or cane can give you extra support. Use night lights or flashlights when getting up in the dark.
- Protect yourself from heat injuries. Set hot water heaters between 40°C to 50°C to reduce scalding risk while washing your hands. Use oven gloves and hot pads when handling hot dishes, racks, or pans. If you take baths, check the water temperature with your elbow or thermometer.

## Blood Disorders

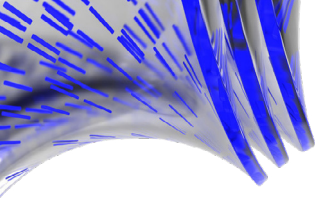
Blood cells are made in the bone marrow, which is the spongy part in the centre of the bones. The bone marrow makes three main types of blood cells, which have specific functions:<sup>1</sup>

- Red blood cells – carry oxygen around the body
- White blood cells – fight infection
- Platelets – helps the blood to clot and prevent bruising.

Because the new blood cells are rapidly dividing, they can be damaged by chemotherapy, and the number of blood cells (your blood count) will be reduced. Low numbers of blood cells may cause anaemia, neutropaenia or thrombocytopenia problems.<sup>1</sup>

You will have blood tests at the beginning of treatment and before each chemotherapy cycle to check that your blood count is adequate before you have chemotherapy.<sup>1</sup>





## Anaemia

Anaemia is when your body's level of red blood cells goes below normal. When you do not have enough red blood cells, your body parts do not get enough oxygen.<sup>26</sup>

Red blood cells are made in the bone marrow. Bone marrow is the soft, spongy tissue found inside your larger bones. A hormone from the kidneys, called erythropoietin, tells your body when to make more red blood cells. Damage to either the bone marrow or the kidneys can cause anaemia.<sup>26</sup>

Chemotherapy can damage bone marrow. This damage usually does not last, and anaemia often improves a few months after chemotherapy ends.<sup>26</sup>

## Managing anaemia

A reduced amount of oxygen circulates through your body, which can make you feel tired, lethargic, dizzy or breathless. The tips for coping with fatigue "Managing fatigue" on page 21 may be helpful. To minimise dizziness, take your time when you get up from sitting or lying down.<sup>1</sup>

Doctors treat anaemia based on the cause and symptoms. Here are some examples:<sup>26</sup>

- **Blood transfusion** - If anaemia is causing symptoms or problems, you may need a red blood cell transfusion. During the transfusion, healthy red blood cells from a donor go into your body through a needle into a vein.
- **Medication** - If chemotherapy causes anaemia, your doctor may prescribe medications called erythropoiesis-stimulating agents (ESAs). ESAs are forms of erythropoietin made in the laboratory. They work by telling your bone marrow to make more red blood cells.
- **Vitamin or mineral supplements** - If a lack of nutrients causes anaemia, your doctor may prescribe supplements. These include iron, folic acid, or vitamin B12. These supplements are usually pills taken by mouth. Occasionally, you may get a vitamin B12 injection. These injections may help your body better absorb the vitamin.

- Also, consider eating foods high in iron or folic acid.<sup>26</sup>

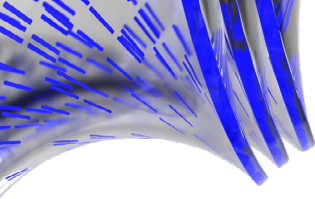
Foods high in iron include:<sup>26</sup>

- Red meat
- Beans
- Dried apricots
- Almonds
- Broccoli
- Enriched bread and cereal

Foods high in folic acid include:<sup>26</sup>

- Asparagus
- Broccoli
- Spinach
- Lima beans
- Enriched breads and cereals





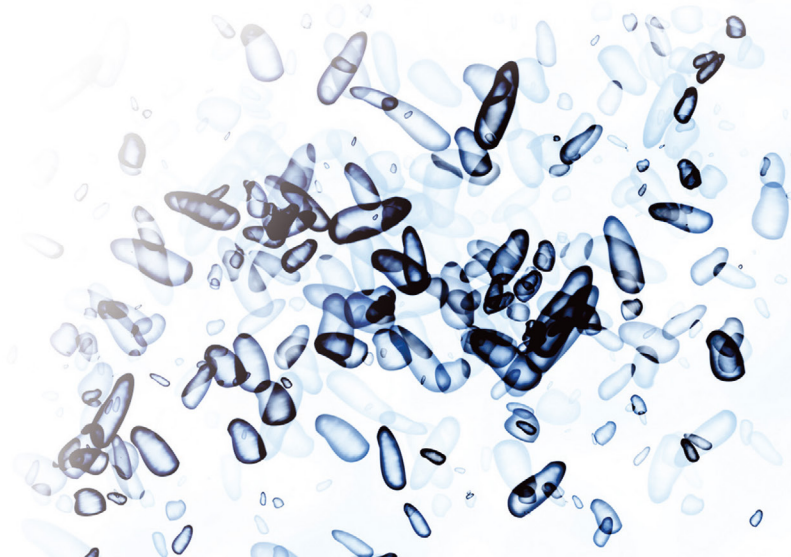
## Neutropaenia

Many types of white blood cells make up the total white cell count. A type of white blood cell known as a neutrophil protects you against infection by destroying harmful bacteria and yeasts that enter the body. Chemotherapy can reduce your white blood cell level, making it harder for your body to fight infections. This is known as neutropaenia.<sup>1</sup>

## Chemotherapy and neutrophils

The timing of the drop in neutrophil levels is based on the type or dose of chemotherapy:<sup>27</sup>

- Neutrophil counts generally start to drop about a week after each round of chemotherapy begins.
- Neutrophil levels reach a low point about 7 to 14 days after treatment. At this point, you are most likely to develop an infection.
- Your neutrophil count then starts to rise again. This is because your bone marrow restarts the normal production of neutrophils. But it may take 3 to 4 weeks to reach a normal level again.
- When your neutrophil level returns to normal, you are ready for the next round of chemotherapy.





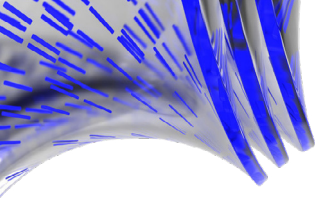
## Managing neutropaenia

While taking chemotherapy, sometimes your neutrophil level does not return to normal fast enough or you develop neutropenia. In this case, your doctor may take certain precautions, including:<sup>1,27</sup>

- Delaying the next round or lower the dose of chemotherapy.<sup>27</sup>
- Antibiotics during longer periods of neutropenia to prevent infections.<sup>27</sup>
- Injections of a growth factor drug called granulocyte-colony stimulating factor (G-CSF) to speed up the production of new white blood cells and protect you from infection.<sup>1</sup>

The following suggestions may help to prevent infection:<sup>1</sup>

- Check your temperature daily and any time you feel unwell
- Wash your hands with soap and water before preparing food and eating, and after using the toilet.
- Avoid touching your eyes, nose and mouth with your hands
- Check with your doctor about having the flu vaccine and ask people close to you to consider having a flu vaccine.
- Ask family and friends with a cold, flu or other contagious infection not to visit until the symptoms have gone away.
- Avoid shaking hands, hugging and kissing other people
- Try to avoid crowded places, such as shopping centres or public transport in peak hour
- Prepare and store food properly to avoid foodborne illness and food poisoning
- Eat freshly cooked foods; avoid raw foods (fish, seafood, meat and eggs) and soft cheeses; wash fruits and vegetables well before eating.



## Thrombocytopenia

Chemotherapy damages bone marrow. This is the tissue inside your bones where your body makes platelets. A low platelet count from chemotherapy is usually temporary.<sup>28</sup>

A low level of platelets (thrombocytopenia) can cause bleeding and clotting problems. You may bleed for longer than normal after minor cuts or scrapes, have nosebleeds or bleeding gums, or bruise easily. Periods may be longer or heavier.<sup>1</sup>

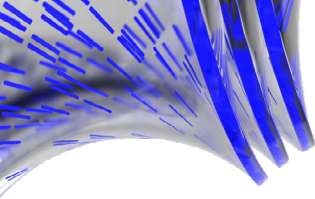
### Managing thrombocytopenia

If you have a low platelet count during chemotherapy, your doctor may decide to adjust your treatment. You might get a lower dose of chemotherapy or wait longer between treatment cycles.<sup>28</sup>

When you have a low platelet count, take extra care to avoid situations that could cause bleeding. The following suggestions may help:<sup>1</sup>

- Blow your nose with care
- Use a soft-bristled toothbrush to avoid irritating your gums.
- Be careful when using knives, scissors or needles, as you may bleed easily from small cuts or nicks.
- Use an electric razor when shaving your face or body to reduce the chance of nicking yourself.
- Wear thick gloves when gardening to avoid injury. (This will also prevent infection from soil, which contains bacteria.)
- Wear comfortable, well-fitting shoes indoors and outdoors to avoid cuts on your feet.
- Avoid contact sports and high impact activities, as these could cause bruising or bleeding if you get knocked or fall over.
- If you bleed, apply pressure to the area for about 10 minutes and bandage as needed.





If chemotherapy causes severe thrombocytopaenia, you may need a platelet transfusion.<sup>1</sup> A transfusion of platelet cells into your blood can help prevent heavy or unexpected bleeding. However, this is a temporary treatment. The platelets from a transfusion only last about 3 days.<sup>28</sup>

## Sexuality and Fertility

Chemotherapy can affect your sexuality and fertility in emotional and physical ways. These changes are common. Some changes may be only temporary while others can be permanent.<sup>1</sup>

Be as honest and open as possible and ask questions so your health care team can help. Remember your health care team must keep the information you tell them confidential. Once a conversation is started, it's easier to continue it and to bring it up again during your future check-ups.<sup>29,30</sup>

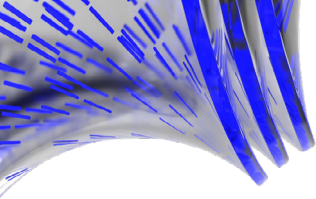


## Changes in sexuality

Sexuality refers to how people express themselves in a sexual way. It includes how they see, feel, and think about themselves as a sexual being, and the ways they show it through their actions, behaviours, and relationships. It's very personal and is different for everyone. Sexuality is sometimes called sexual health. The reality is that a person's sex organs, sexual desire (sex drive or libido), sexual function, well-being, and body image can be affected by cancer and cancer treatment.<sup>29</sup>

Talk about how you're feeling with your partner and take time to adapt to any changes. Try to see yourself as a whole person (body, mind and personality) instead of focusing only on what has changed. If you're worried about changes to how you feel about yourself, your relationships or sexual functioning, you may find talking to a psychologist or counsellor helpful.<sup>1</sup>





## Changes in fertility

Chemotherapy can affect your ability to have children (fertility).<sup>1</sup> The problems might be caused by:<sup>30</sup>

- A tumour directly damaging an organ or its surrounding tissue.
- Removing cancerous organs that normally would be needed to have a child (for example, removal of all or part of the testicles, penis, ovaries, uterus, or cervix.)
- Changes in hormone levels can reduce egg/sperm production, damage nerves, make certain sex organs stop working properly and can put a woman into early menopause.
- Psychological or emotional responses, such as stress and anxiety.

It's very important to let your health care team know your sexual orientation and gender identity, including what gender you were at birth and how you describe yourself now. Letting your health care team know this information will help you get the personalized care you need.<sup>30</sup>

If you want to have children in the future, talk to your doctor about how chemotherapy might affect you and what options are available. Women may be able to store eggs (ova), embryos or ovarian tissue, and men may be able to store sperm for later use. This needs to be done before chemotherapy starts and requires careful consideration. Some women are able to have hormone injections to reduce activity in the ovaries and protect eggs from being damaged.<sup>1</sup>

## Using contraception

As chemotherapy drugs can harm an unborn baby, your doctor may talk to you about using contraception during and after chemotherapy. If you are in a heterosexual relationship and sexually active, you will need to use some form of contraception to avoid pregnancy while having treatment. You will also need to use some form of barrier contraception (condom, female condom) to protect your partner from any chemotherapy drugs that may be present in your body fluids.<sup>1</sup>



## Emotional Effects

Many people with cancer are told by family and friends to 'stay positive', but sadness, distress, depression, fear, and anxiety are all normal feelings when learning to deal with cancer. Ignoring these feelings or not talking about them can make the person with cancer feel alone. And this can make it harder for them to cope with how they are feeling.<sup>31</sup>

Instead, a person with cancer should talk about their feelings. Many people find it helpful to join a support group or seek counselling. Working through their feelings can help a person with cancer feel more optimistic. And this optimism can lead to a better quality of life. Research shows that giving people with cancer information in a support group helps reduce tension, anxiety, and tiredness, and may lower the risk of depression. Being in a support group may also improve feelings of well-being and quality of life.<sup>31</sup>

Life after cancer treatment can present its own challenges. You may have mixed feelings when treatment ends and worry that every ache and pain means the cancer is coming back. Some people say that they feel pressure to return to "normal life". Your family and friends may also need time to adjust.<sup>1</sup>

It is important to allow yourself time to adjust to the physical and emotional changes and establish a new daily routine at your own pace. Talk to your GP, for counselling or medication – even for a short time – may help.<sup>1</sup>

## Other side effects

Specific chemotherapies might cause other side effects that have not been covered in this booklet. Always remember that if you have any questions about cancer, its treatment, or possible side effects, please speak to your doctor, nurse or health care team.



## When you should contact your doctor

During chemotherapy treatment, you might be more aware of physical changes because your health care team will give you lots of information about side effects. Do not take any physical symptoms you have lightly. Some side effects are short-lived and minor, but others may be a sign of serious problems. Make sure you know how to reach someone on your team at any time, including after hours, weekends, and holidays.<sup>11</sup>

## Symptoms that need to be reported

Below are some of the cautionary symptoms to be aware of. In addition to any other symptoms communicated by your doctor, please seek further medical advice:<sup>1</sup>

- a temperature of 38°C or higher
- chills or shivering
- sweating, especially at night
- burning or stinging feeling when urinating
- a severe cough or sore throat
- shortness of breath
- vomiting that lasts more than a few hours
- severe abdominal pain, constipation, or diarrhoea
- unusual bleeding or bruising, such as heavy nosebleeds, blood in your urine or stool
- prolonged faintness or dizziness and a rapid heartbeat
- any sudden deterioration in your health.

## Questions to ask your doctor, nurse or health care team

Regular communication is important in making informed decisions about your health care. It may help to write down questions to take with you to your next visit.<sup>32</sup>

### Suggestions to help you remember the answers:<sup>32</sup>

- Take notes during your visits. Don't feel shy about asking your doctor to slow down if you need more time to write. Ask questions if you don't understand something.
- If you can, record your visit so you won't miss anything. But first ask your doctor if it's OK to record your talks.
- Consider taking a friend or relative with you to help you understand what your doctor says during the visit, to take notes, and to help refresh your memory afterwards.



## Improving general concentration and memory

Some people say they have difficulty concentrating, focusing and remembering things after they have had chemotherapy. This is called cancer-related cognitive impairment. Other terms used to describe this include “chemotherapy brain”, “cancer fog” and “brain fog”.<sup>1</sup>

Thinking and memory changes may be caused by treatment or medicines, fatigue and sleep problems, or emotional concerns, such as stress or depression. These problems usually improve with time. The following suggestions may help:<sup>1</sup>

- Use a calendar or set a timer on your phone to keep track of tasks, medical appointments, when to take medicines, social commitments, birthdays, etc.
- Write down anything you need to remember, e.g. to-do items, where you parked the car.
- Get plenty of sleep. Deep sleep is important for memory and concentration.
- Do light exercise every day to help you be more alert and sleep better.
- Learn something new, e.g. take up a new hobby or do crosswords or puzzles.
- Discuss changes to your ability to concentrate and remember things with your partner, family or workplace, and ask for their support or assistance.



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