

Chemotherapy side effects

Side effects of chemotherapy

- Bone marrow suppression
- Sore mouth
- Inflamed mucous membranes
- Nausea and vomiting
- Loss of appetite
- Changes in taste and smell
- Diarrhea
- Dehydration
- Constipation
- Fatigue
- Flu-like symptoms
- Hair loss
- Skin changes
- Eye changes
- Pain
- Cystitis
- Bedwetting
- Weight gain
- Pain at the injection site
- Inflamed vein
- Allergic reactions
- Fluid retention
- Organ damage
- Second cancers

Chemotherapy drugs kill cancer cells, but they can also damage healthy cells. This damage to healthy cells causes side effects. Different cells and tissues in the body tolerate chemotherapy differently. Chemotherapy drugs have the greatest effect on rapidly dividing cells, such as blood cells in the bone marrow, cells lining the mouth and gastrointestinal (GI) Referring to or having to do with the digestive organs, particularly the stomach, small intestine and large intestine. tract and hair follicle cells.

Side effects can occur with any type of treatment, but not everyone has them or experiences them in the same way. Side effects of chemotherapy will depend mainly on:

- the type of drug
- the dose
- how the drug is given
- the person's overall health

Side effects can happen any time during, immediately after, or a few days or weeks after chemotherapy. Most side effects go away when chemotherapy is over. However, some side effects may continue after treatment is over because it takes time for healthy cells

to recover from the effects of chemotherapy drugs. Late side effects can occur months or years after treatment. Some side effects may last a long time or be permanent.

It is important to report side effects to the healthcare team. Doctors may also grade (measure) how severe certain side effects are. Sometimes chemotherapy treatments need to be adjusted if side effects are severe.

The following are the most common side effects that people tend to experience with chemotherapy. Some people may experience all, some or none of these side effects. Others may experience different side effects.

Bone marrow suppression

Bone marrow suppression is a condition in which one or more of the main types of blood cells are decreased.

- A low white blood cell count (neutropenia or leukopenia) increases the risk for infection.
- A low platelet count (thrombocytopenia) increases the risk for bruising and bleeding.
- A low red blood cell count (anemia) causes fatigue, paleness and malaise.

Low blood cell counts occur because of chemotherapy's effect on blood cells made in the bone marrow. Blood cell counts often reach their lowest level about 7–14 days after chemotherapy. Bone marrow suppression is the most common and most serious side effect of chemotherapy. When it happens, the dose of chemotherapy is adjusted right away or chemotherapy may have to be stopped temporarily.

Sore mouth

A sore mouth (also called stomatitis or oral mucositis) occurs because of chemotherapy's effect on cells inside the mouth. Many drugs can cause a sore mouth and it occurs more often when higher doses of drugs are used. A sore mouth occurs about a week (anywhere from 5–14 days) after chemotherapy is started. It often improves on its own a few weeks after treatment is finished.

Painful sores, ulcers or infection can develop in the mouth, throat or gums. Thorough, regular mouth care can help prevent a sore mouth and reduce infection. The healthcare team will give instructions about how often to clean and rinse the mouth and what to use. Some people may need pain medicines or special oral solutions to relieve pain.

Inflamed mucous membranes

Mucous membranes line many of the organs in the body, from the mouth to the rectum and vagina. Chemotherapy can damage cells in the mucous membrane so they become inflamed (mucositis). Chemotherapy can cause painful ulcers, bleeding and infection in the esophagusThe muscular tube in the neck and chest through which food passes from the pharynx (throat) to the stomach., colonThe longest part of the large intestine that receives almost completely digested food from the cecum (the first part of the large intestine), absorbs water and nutrients and passes waste (stool or feces) to the rectum. and vaginaThe muscular canal in the pelvis of females that extends from the cervix (the

lower, narrow part of the uterus, or womb) to the vulva on the outside of the body..

Mucositis is usually temporary and goes away a few weeks after treatment.

Difficult or painful swallowing, heartburn or pain in the upper abdomen (epigastric area) should be reported to the doctor or healthcare team. Pain caused by an inflamed esophagus (esophagitis) can affect eating. Some people may need to change their diet or take pain-relieving medicines if they have difficulty swallowing or swallowing is painful.

Vaginal itching, discharge, odour, pain and bleeding should be reported to the doctor or healthcare team. Cool compresses or a warm water bath may relieve vaginal itching and pain. Tampons and feminine hygiene pads that contain deodorants should not be used. The doctor may order medicines to treat vaginal infections or relieve pain.

Nausea and vomiting

Not all chemotherapy drugs cause nausea and vomiting. Individual drugs vary in their effects, but nausea and vomiting are more likely when combinations of chemotherapy drugs are given.

Nausea and vomiting can occur within the first few hours after chemotherapy drugs are given and usually last about 24 hours. However, delayed nausea and vomiting may continue for a few days after treatment. Some people may have anticipatory nausea after having a few treatments, where they feel nauseated even before treatment is given because they expect to be sick. The healthcare team can help you manage nausea and vomiting by prescribing anti-emetics and counselling you on how to take them more effectively.

Loss of appetite

Nausea and vomiting, fatigue or a build-up of waste products as cancer cells die can cause loss of appetite. Some chemotherapy drugs can cause temporary changes in taste and smell, which can make foods seem less appetizing. Some people lose interest in food completely and don't eat, even though they know they need to. This can lead to weight loss and malnutrition. Maintaining good nutrition during and after chemotherapy is important to help a person recover from treatment.

Changes in taste and smell

Some chemotherapy drugs can affect taste buds, changing the brain's perception of how food tastes and causing changes in taste. Meats often taste bitter and sweets can taste unpleasant. Even foods that people crave can taste bad. Some drugs can also heighten the sense of smell so that smells other family members do not notice can cause nausea in a person getting chemotherapy. It can take months for both the sense of smell and the sense of taste to return to normal after chemotherapy ends.

Diarrhea

Diarrhea is an increase in the number and looseness of stools. It occurs because chemotherapy drugs often affect the cells that line the gastrointestinal (GI) tract. Many factors increase the risk of diarrhea, including the type and dose of chemotherapy drugs used. Diarrhea is often worse when combinations of drugs are given. Diarrhea can occur

soon after chemotherapy starts and may continue for up to 2 weeks after treatment has ended.

Dehydration

Fever, vomiting and diarrhea can cause dehydration, especially in children if they can't drink to replace fluid that is lost.

Signs and symptoms of dehydration include:

- dry skin or mouth
- feeling thirsty
- weakness or light-headedness
- small amounts of urine or dark-coloured urine
- weight loss

In infants, signs of dehydration may include:

- no tears when crying
- a sunken soft-spot on the head (anterior fontanel)
- fewer wet diapers

Constipation

Constipation is when stools become hard, dry and difficult to pass. Many factors increase the risk of constipation, including the type of chemotherapy drug used, medicines given with chemotherapy to relieve nausea and vomiting, and lower fluid intake. Constipation can occur 3–7 days after the chemotherapy drug is given.

Fatigue

Fatigue makes a person feel more tired than usual and can interfere with daily activities and sleep. It occurs for a variety of reasons. Fatigue may be caused by anemia, specific drugs, poor appetite or depression. It may also be related to toxic substances that are produced when cancer cells break down and die. Fatigue can occur days after a chemotherapy treatment cycle and can continue long after the person has finished cancer treatment. It may get better as time goes by.

Fatigue is often described in younger children as:

- feeling weak or tired
- having a blank look
- feeling sad
- having difficulty with body movements such as using their arms and legs or opening their eyes

Fatigue is often described by adolescents as:

- sleepiness
- being physically and mentally tired
- feeling “not themselves”
- lack of energy

Flu-like symptoms

Some types of chemotherapy can make people feel like they have the flu. Flu-like symptoms are more likely to occur if biological therapy is given along with chemotherapy. These symptoms usually last for 1–3 days and may include:

- muscle and joint aches
- headache
- fatigue
- nausea
- fever
- chills
- loss of appetite

Flu-like symptoms can also be caused by an infection or the cancer itself. Tell your healthcare team if you have any of these symptoms.

Hair loss

Hair loss (alopecia) is a common side effect of many, but not all, chemotherapy drugs. Hair follicles are vulnerable to chemotherapy drugs because they grow fast. The extent and duration of hair loss is unpredictable because it depends on the type and dose of drugs used as well as personal factors. Hair loss can occur on all parts of the body, including the face and scalp. Hair loss can begin within a few days or 2–3

weeks after chemotherapy starts. Hair usually grows back once chemotherapy treatments are over.

It is often recommended that people do not perm, straighten, dye or colour their hair during treatment. Wait until the hair grows back and hair returns to its original state before using harsh chemicals on the hair. This may take 6 months or more after treatment. Talk to the healthcare team about when it is okay to use these products again.

Losing hair can be frightening for children, especially if they're at an age when being different isn't cool. Getting a shorter haircut may make it less traumatic for children once their hair starts falling out. Children may feel more comfortable wearing hats, bandannas, scarves or wigs until the hair grows back. Children's cancer treatment centres can help children and their parents adjust to hair loss and find the right look. To protect the head from sun exposure, children should wear a hat and sunscreen while outside. If children don't lose their hair, mild shampoos and hair products are recommended to avoid scalp irritation.

Skin changes

Some drugs can cause minor skin changes or skin irritation. Skin changes can occur during and for some time after chemotherapy. Skin reactions can include redness, itching, dryness, rash or nail changes. Skin may also be more sensitive to or easily irritated by the sun during chemotherapy treatment.

Eye changes

Some chemotherapy drugs cause eye changes, including blurry vision, watery eyes and trouble wearing contact lenses. Tell the doctor or healthcare team if you have changes to your eyes and ask if you can wear contact lenses while getting chemotherapy

Pain

Some chemotherapy drugs can cause painful side effects, such as aching in the muscles and joints, headaches and stomach pains. Burning, numbness, tingling or shooting pains in the hands and feet may also occur. This may continue for a period of time after treatment ends. The healthcare team will give instructions about what medicines to use to relieve the pain.

Cystitis

Some chemotherapy drugs can irritate the lining of the bladder (called cystitis) and cause inflammation or bleeding. Cystitis is more likely to occur when high doses of a drug are used. Drinking lots of fluids and emptying the bladder often can decrease the risk of cystitis.

Bedwetting

Bedwetting can be a side effect of chemotherapy for children. Some drugs increase thirst, while others disrupt normal sleep patterns, both of which can make bedwetting more likely. Lots of intravenous (IV) fluids at night are a problem for some children. When bedwetting is caused by drugs or IV fluids, the problem will go away in time. Once the drug or extra fluid is no longer necessary, the bedwetting will stop.

There are also psychological reasons for bedwetting during chemotherapy. The trauma of cancer treatment causes many children to regress to earlier behaviours, such as thumb-sucking, baby talk, temper tantrums and bedwetting. Punishment for this type of bedwetting only adds to the child's trauma and rarely solves the problem.

Weight gain

Weight gain may occur in some people during chemotherapy, especially if medicines such as corticosteroids are given.

Pain at the injection site

Many chemotherapy drugs are given by an injection, usually intravenously (into a vein). After the initial stick to insert the needle or catheter into the vein, there is usually no discomfort or pain when IV chemotherapy drugs are given. Sometimes drugs can escape from the vein and leak into the surrounding tissues (extravasation). Some chemotherapy drugs can be very irritating to tissues. These drugs are called vesicants. When these drugs get into the tissues, they can cause redness, swelling, pain, burning or stinging at the injection site. In some cases, chemotherapy drugs that escape from the vein can cause severe damage to the skin and surrounding soft tissue.

Inflamed vein

An intravenous (IV) needle or catheter can cause the vein to become inflamed (phlebitis). While the device is in place, the area around the insertion site or along the vein can become red, warm, tender or painful and swollen. The chances of developing phlebitis increase with the:

- length of time the IV needle or catheter is in place
- type of drug or solution being given
- size and location of the needle or catheter

Nurses often check IV sites for signs of phlebitis. IV sites are changed according to hospital or clinic practice. If phlebitis occurs, the IV needle or catheter is usually removed and started in another site. Warm, moist compresses are used to reduce inflammation. This usually helps relieve the inflammation within a few days.

Allergic reactions

Allergic reactions are not a common side effect of chemotherapy, but they can happen. Although any drug can cause an allergic reaction, some chemotherapy drugs are more likely than others to cause allergic or hypersensitivity reactions. Symptoms include difficulty breathing, skin rash or hives and itching. Sometimes medicine is given before chemotherapy to prevent an allergic reaction.

Fluid retention

Fluid retention is a build-up of fluid in the body. It can cause the face, hands or feet to feel swollen and puffy. Fluid can build up in the lower part of the belly, which can cause bloating. Fluid build-up around the lungs and heart can cause coughing, shortness of breath or an irregular heartbeat. Let the doctor know if you gain weight quickly.

Avoiding salty foods and table salt and limiting fluids may help manage fluid retention. If you retain a lot of fluid, you may be given medicine to help get rid of the extra fluid.

Organ damage

Certain chemotherapy drugs can damage the cells of some organs in the body. The healthcare team takes steps to limit the damage to healthy cells, but occasionally organ damage can occur. Whether or not organ damage occurs depends on many factors.

Some of the organs that may be affected by chemotherapy include the:

- heart
 - lungs
 - liver
 - kidneys
 - bladder
 - reproductive organs
- Damage to the reproductive organs can cause fertility problems in both men and women. It can also cause treatment-induced menopause in women.
 - In children, chemotherapy can affect the ovaries or testicles so they produce smaller amounts of the sex hormones. This can affect the reproductive system and may result in

delayed puberty (development of secondary sexual characteristics). Some children may not be fertile when they are adults as a result of some chemotherapy drugs.

- nervous system

Damage to the nervous system can cause peripheral neuropathy peripheral neuropathy a disorder of the peripheral nerves (nerves outside the brain and spinal cord) that causes pain, numbness, tingling, burning, swelling, muscle weakness and loss of reflexes in different parts of the body. or “chemo-brain.”

Some types of chemotherapy drugs can damage the inner ear, which can result in hearing loss or balance changes and is usually not reversible. Hearing damage can affect a child’s social, emotional and intellectual development.

Second cancers

A very small number of people may develop a second cancer caused by certain chemotherapy drugs. People who receive both radiation therapy and chemotherapy have the highest risk of developing a second cancer. The benefit of treating a person’s cancer usually far outweighs the risk of developing a second cancer from chemotherapy treatment. A second cancer can develop any time, sometimes 15 or more years after treatment.