

## Bleomycin (Blenoxane®)

**Pronounce:** blee-oh-MY-sin

**Classification:** Antineoplastic Antibiotic

### About Bleomycin (Blenoxane®)

The way bleomycin works is not fully understood. It is thought to affect cell reproduction and growth, reducing the number of cancer cells in the body.

### How to Take Bleomycin

Bleomycin is given by intravenous (IV, into a vein) infusion, intramuscular (IM, into a muscle), or subcutaneous (SQ, under the skin) injections. It can be given alone or in combination with other medications.

Bleomycin can also be used as a "sclerosing" agent to treat pleural effusions. In this case, it causes scarring of the pleural space to prevent the effusion (fluid) from building back up.

### Possible Side Effects

There are a number of things you can do to manage the side effects of bleomycin. Talk to your care team about these recommendations. They can help you decide what will work best for you. These are some of the most common or important side effects:

#### Pulmonary (Lung) Toxicity

Bleomycin may cause serious lung problems. The risk may be higher in the elderly or those who received high doses, but lung effects have also happened in young patients and with low doses. There is a lifetime maximum dose of this medication due to the possibility of lung problems, which can include [pneumonitis](#) (inflammation of lung tissue) and pulmonary fibrosis (scarring and stiffening of the lung tissue). These problems can begin months to a few years after treatment is done. You may have breathing tests (pulmonary function tests, or PFTs) before starting bleomycin. Tell your healthcare provider if you have any shortness of breath, cough, or wheezing. If you are having a hard time breathing, call 911 or go to the closest emergency room right away.

If you are planning for any type of surgery, tell your healthcare team that you have received bleomycin, as there is a greater risk for having pulmonary (lung) problems from oxygen given during surgery.

It is strongly recommended that you do not smoke if you have received bleomycin, as this increases the risk of lung complications. You should report any shortness of breath, difficulty breathing, cough, or wheezing to your care provider. Lung complications can happen several years after treatment with bleomycin, so you should be sure all of your care providers know you received this medication and have any new lung symptoms checked. Of note, patients who have received this medication are recommended to have clearance by a dive medicine specialist prior to scuba diving.

#### Allergic-Like Reactions

An allergic-like reaction with fever, chills, low blood pressure, wheezing, or difficulty breathing may occur immediately or up to a few days after receiving treatment. If needed, medications are given to help with these effects. If you have any of these effects, tell your care team right away.

## Nail and Skin Changes

Your fingernails/toenails may become dark, thick, brittle, or fall off. Your skin may be dry, feel thick, or appear darker (hyperpigmentation). Your skin may be more sensitive to the sun, which can cause severe sunburn or rash. Sun sensitivity can last even after you have stopped taking the medication. Avoid the sun between 10 am to 2 pm when it is strongest. Wear sunscreen (at least SPF 15) every day, wear sunglasses and long sleeves/pants to protect your skin. Keep your fingernails and toenails clean and dry. You may use nail polish, but do not wear fake nails. Tell your provider if any nails fall off.

This medication can also cause radiation recall. This is redness, swelling, or blistering of the skin in an area that was previously treated (even years ago) with radiation. The goal of treatment for radiation recall is to manage the symptoms until it heals. Topical steroids or anti-inflammatory medications or cool compresses may help. Avoid sun exposure and tight-fitting clothes that would rub on the area.

## Loss or Thinning of Scalp and Body Hair (Alopecia)

Your hair may become [thin, brittle, or may fall out](#). This typically begins two to three weeks after treatment starts. This hair loss can be all body hair, including pubic, underarm, legs/arms, eyelashes, and nose hairs. The use of scarves, wigs, hats, and hairpieces may help. Hair generally starts to regrow soon after treatment is completed. Remember your hair helps keep you warm in cold weather, so a hat is particularly important in cold weather or to protect you from the sun.

## Mouth Ulcers (Mucositis)

Certain cancer treatments can cause sores or soreness in your mouth and/or throat. Notify your oncology care team if your mouth, tongue, inside of your cheek or throat becomes white, ulcerated, or painful. Performing [regular mouth care](#) can help prevent or manage mouth sores. If mouth sores become painful, your doctor or nurse can recommend a pain reliever.

- Brush with a soft-bristle toothbrush or cotton swab twice a day.
- Avoid mouthwashes that contain alcohol. A baking soda and/or salt with warm water mouth rinse (2 level teaspoons of baking soda or 1 level teaspoon of salt in an eight-ounce glass of warm water) is recommended 4 times daily.
- If your mouth becomes dry, eat moist foods, drink plenty of fluids (6-8 glasses), and suck on sugarless hard candy.
- Avoid smoking and chewing tobacco, drinking alcoholic beverages, and citrus juices.

## Decrease in Appetite

[Nutrition](#) is an important part of your care. Cancer treatment can affect your appetite and, in some cases, the side effects of treatment can make eating difficult. Ask your nurse about nutritional counseling services at your treatment center to help with food choices.

- Try to eat five or six small meals or snacks throughout the day, instead of 3 larger meals.
- If you are not eating enough, nutritional supplements may help.
- You may experience a metallic taste or find that food has no taste at all. You may dislike foods or beverages that you liked before receiving cancer treatment. These symptoms can last for several months or longer after treatment ends.
- Avoid any food that you think smells or tastes bad. If red meat is a problem, eat chicken, turkey, eggs, dairy products, and fish without a strong smell. Sometimes cold food has less of an odor.
- Add extra flavor to meat or fish by marinating it in sweet juices, sweet and sour sauce, or dressings. Use seasonings like basil, oregano, or rosemary to add flavor. Bacon, ham, and onion can add flavor to vegetables.

## Nausea and/or Vomiting

Talk to your care team so they can prescribe medications to help you manage [nausea and vomiting](#). In addition, dietary changes may help. Avoid things that may worsen the symptoms, such as heavy or greasy/fatty, spicy or acidic foods (lemons, tomatoes, oranges). Try antacids, (e.g. milk of magnesia, calcium tablets such as Tums), saltines, or ginger ale to lessen symptoms.

Call your provider if you are unable to keep fluids down for more than 12 hours or if you feel lightheaded or dizzy at any time.

## Reproductive Concerns

Exposure of an unborn child to this medication could cause birth defects, so you should not become pregnant or father a child while on this medication. Effective birth control is necessary during treatment. Even if your menstrual cycle stops or you believe you are not producing sperm, you could still be fertile and conceive. You should not breastfeed while receiving bleomycin.

# Dacarbazine (DTIC, DTIC-Dome®)

**Pronounce:** da-KAR-ba-zeen

**Classification:** Alkylating Agent

## About Dacarbazine (DTIC, DTIC-Dome®)

Dacarbazine exerts its anti-cancer affect by a process called alkylation. Alkylation damages the DNA of cells, which prevents them from dividing, and causes them to die. Since cancer cells, in general, divide faster and with less error correcting than healthy cells, cancer cells are more sensitive to this damage.

## How to Take Dacarbazine

Dacarbazine is given through intravenous (IV, into a vein) infusion. The dosage and schedule are determined by the person's size, type of cancer, and treatment regimen. It can be given alone or with other medications.

Even when carefully and correctly administered by trained personnel, this drug may cause a feeling of burning and pain. There is a risk that this medication may leak out of the vein at the injection site, resulting in tissue damage that can be severe. If the area of injection becomes red, swollen, or painful at any time during or after the injection, notify your care team immediately. Do not apply anything to the site unless instructed by your care team.

## Possible Side Effects of Dacarbazine

There are a number of things you can do to manage the side effects of dacarbazine. Talk to your care team about these recommendations. They can help you decide what will work best for you. These are some of the most common or important side effects:

### Low White Blood Cell Count (Leukopenia or Neutropenia)

White blood cells (WBC) are important for fighting infection. While receiving treatment, your [WBC count can drop](#), putting you at a higher risk of getting an infection. You should let your doctor or nurse know right away if you have a fever (temperature greater than 100.4°F or 38°C), sore throat or cold, shortness of breath, cough, burning with urination, or a sore that doesn't heal.

#### Tips to preventing infection:

- [Washing hands](#), both yours and your visitors, is the best way to prevent the spread of infection.
- Avoid large crowds and people who are sick (i.e.: those who have a cold, fever, or cough or live with someone with these symptoms).

- When working in your yard, wear protective clothing including long pants and gloves.
- Do not handle pet waste.
- Keep all cuts or scratches clean.
- Shower or bathe daily and perform frequent [mouth care](#).
- Do not cut cuticles or ingrown nails. You may wear nail polish, but not fake nails.
- Ask your oncology care team before scheduling dental appointments or procedures.
- Ask your oncology care team before you, or someone you live with has any vaccinations.

## Low Platelet Count (Thrombocytopenia)

Platelets help your blood clot, so when the [count is low](#) you are at a higher risk of bleeding. Let your oncology care team know if you have any excess bruising or bleeding, including nose bleeds, bleeding gums or blood in your urine or stool. If the platelet count becomes too low, you may receive a transfusion of platelets.

- Do not use a razor (an electric razor is fine).
- Avoid contact sports and activities that can result in injury or bleeding.
- Do not take aspirin (salicylic acid), non-steroidal, anti-inflammatory medications (NSAIDs) such as Motrin/Advil (ibuprofen), Aleve (naproxen), Celebrex (celecoxib), etc. as these can all increase the risk of bleeding. Please consult with your healthcare team regarding use of these agents and all over-the-counter medications/supplements while on therapy.
- Do not floss or use toothpicks and use a soft-bristle toothbrush to brush your teeth.

## Low Red Blood Cell Count (Anemia)

Your red blood cells are responsible for carrying oxygen to the tissues in your body. When the [red cell count is low](#), you may feel tired or weak. You should let your oncology care team know if you experience any shortness of breath, difficulty breathing, or pain in your chest. If the count gets too low, you may receive a blood transfusion.

## Liver Problems

This medication can affect your liver including serious conditions called hepatic vein thrombosis (blood clot in the liver) and hepatocellular necrosis (death of liver cells). Call your care provider right away if you have yellowing of the skin or eyes, if your urine appears dark or brown, or if you have pain in your abdomen (belly).

## Secondary Malignancies

There is a very low risk of developing another type of cancer, including fibrosarcoma, sarcoma, or angiosarcoma due to treatment with this medication, which can occur many years after treatment.

## Nausea and/or Vomiting

Limiting food intake for 4-6 hours before receiving the medication may help with these side effects. Talk to your doctor or nurse so they can prescribe medications to help you manage [nausea and vomiting](#). In addition, dietary changes may help. Avoid things that may worsen the symptoms, such as heavy or greasy/fatty, spicy or acidic foods (lemons, tomatoes, oranges). Try antacids, (e.g. milk of magnesia, calcium tablets such as Tums), saltines, or ginger ale to lessen symptoms.

Call your doctor or nurse if you are unable to keep fluids down for more than 12 hours or if you feel lightheaded or dizzy at any time.

## Decrease in Appetite

[Nutrition](#) is an important part of your care. Cancer treatment can affect your appetite and, in some cases, the side effects of treatment can make eating difficult. Ask your nurse about nutritional counseling services at your treatment center to help with food choices.

- Try to eat five or six small meals or snacks throughout the day, instead of 3 larger meals.
- If you are not eating enough, nutritional supplements may help.
- You may experience a metallic taste or find that food has no taste at all. You may dislike foods or beverages that you liked before receiving cancer treatment. These symptoms can last for several months or longer after treatment ends.
- Avoid any food that you think smells or tastes bad. If red meat is a problem, eat chicken, turkey, eggs, dairy products, and fish without a strong smell. Sometimes cold food has less of an odor.

Add extra flavor to meat or fish by marinating it in sweet juices, sweet and sour sauce, or dressings. Use seasonings like basil, oregano, or rosemary to add flavor. Bacon, ham, and onion can add flavor to vegetables.

## Flu-Like Symptoms

Dacarbazine can cause fever, body aches, and sometimes a rash. You may also experience weakness and headaches. These symptoms generally do not last long. These symptoms usually occur during the treatment and stop after the treatment is discontinued. Call your doctor or nurse for fever greater than 100.4 °F or 38°C or any other symptom listed. Drink plenty of fluids.

## Important but Less Common Side Effects

- **Loss or Thinning of Scalp and Body Hair (Alopecia):** Your hair may become [thin](#), [brittle](#), or [may fall out](#). This typically begins two to three weeks after treatment starts. This hair loss can be all body hair, including pubic, underarm, legs/arms, eyelashes, and nose hairs. The use of scarves, wigs, hats, and hairpieces may help. Hair generally starts to regrow soon after treatment is completed. Remember your hair helps keep you warm in cold weather, so a hat is particularly important in cold weather or to protect you from the sun.
- **Sun Sensitivity:** This medication can make your skin more sensitive to the sun, which can result in severe sunburn or rash. Sun sensitivity can last even after chemotherapy is completed. Avoid the sun between 10-2 pm, when it is strongest. Wear sunscreen (at least SPF 15) every day; wear sunglasses, a hat, and long sleeves/pants to protect your skin and seek out shade whenever possible.
- **Allergic Reactions:** In some cases, patients can have an allergic reaction to this medication. Signs of a reaction can include: shortness of breath or difficulty breathing, chest pain, rash, flushing or itching, or a decrease in blood pressure. If you notice any changes in how you feel during the infusion, let your nurse know immediately.

## Sexual & Reproductive Concerns

This drug may affect your reproductive system, resulting in the menstrual cycle or sperm production becoming irregular or stopping permanently. Women may experience menopausal effects including hot flashes and [vaginal dryness](#). In addition, the desire for sex may decrease during treatment.

Exposure of an unborn child to this medication could cause birth defects, so you should not become pregnant or father a child while on this medication. Effective birth control is necessary during treatment, even if your menstrual cycle stops or you believe you are not producing sperm. You may want to consider sperm banking or egg harvesting if you may wish to have a child in the future. Discuss these options with your oncology team. You should not breastfeed while on this medication.

# Doxorubicin (Adriamycin® , Rubex® )

**Pronounce:** DOX-oh-ROO-bi-sin

**Classification:** Anthracycline

## About Doxorubicin (Adriamycin®, Rubex®)

Anthracyclines work by interrupting the copying of DNA, which is necessary for cancer cell growth. This causes the cancer cells to die, slowing or stopping tumor growth. Doxorubicin interferes with the growth of cancer cells and slows their spread in the body by inhibiting DNA synthesis and causing the production of harmful free radicals.

## How to Take Doxorubicin

Doxorubicin is given through an intravenous (IV, into a vein) infusion or injection. It can be given alone or with other drugs. The dosage and schedule are determined by your height and weight, type of cancer, and how the medication is given.

Even when carefully and correctly administered by trained personnel, this drug may cause a feeling of burning and pain. There is a risk that this medication may leak out of the vein at the injection site, leading to tissue damage that can be severe. If the area of injection becomes red, swollen, or painful at any time during or after the injection, tell your care team right away. Do not apply anything to the site unless told to do so by your care team.

This medication is red. Your urine may look orange or reddish in color for 1-2 days after the infusion. This is not blood. This is expected as the medication is cleared from your body. If the red urine lasts more than two days or if you have other urinary symptoms, such as frequency or painful urination, call your healthcare provider.

The blood levels and effectiveness of this medication can be affected by certain foods and medications, so they should be avoided. These include verapamil, phenytoin, fluconazole, voriconazole, St. John's wort, phenobarbital, trastuzumab, dexamethasone, and 6-mercaptopurine, among others. Be sure to tell your healthcare provider about all medications and supplements you take.

## Possible Side Effects of Doxorubicin

There are a number of things you can do to manage the side effects of doxorubicin. Talk to your care team about these recommendations. They can help you decide what will work best for you. These are some of the most common or important side effects:

### Heart Problems

In rare cases, the heart muscle can be damaged by this medication, causing heart failure and cardiomyopathy. This heart damage can occur during therapy or many months to years after treatment. The risk is highest at higher doses, in patients who receive other cardio-toxic medications, radiation to the chest area, and in children. There is a maximum lifetime dose that you can receive of this medication. Your provider may order tests to check your heart function before you begin treatment or if any symptoms arise.

If you have shortness of breath, new or worsening cough, ankle swelling, chest pain, rapid or irregular heartbeats, call your provider right away, or call 911.

### Secondary Cancers

A secondary cancer is one that develops as a result of cancer treatment for another cancer. This is quite rare, but you should be aware of the risk. In most cases, a secondary cancer related to chemotherapy is a blood cancer (leukemia, lymphoma). This can occur years after treatment. This is most often associated with repeated treatments or high doses. Your provider will monitor your labs closely. You may need a complete blood count with differential checked each year by your healthcare provider if you received high-risk therapies.

### Low White Blood Cell Count (Leukopenia or Neutropenia)

White blood cells (WBC) are important for fighting infection. While receiving treatment, your [WBC count can drop](#), putting you at a higher risk of getting an infection. You should let your doctor or nurse know right away if you have a fever (temperature greater than 100.4°F or 38°C), sore throat or cold, shortness of breath, cough,

burning with urination, or a sore that doesn't heal.

### **Tips to preventing infection:**

- [Washing hands](#), both yours and your visitors, is the best way to prevent the spread of infection.
- Avoid large crowds and people who are sick (i.e.: those who have a cold, fever, or cough or live with someone with these symptoms).
- When working in your yard, wear protective clothing including long pants and gloves.
- Do not handle pet waste.
- Keep all cuts or scratches clean.
- Shower or bathe daily and perform frequent [mouth care](#).
- Do not cut cuticles or ingrown nails. You may wear nail polish, but not fake nails.
- Ask your oncology care team before scheduling dental appointments or procedures.
- Ask your oncology care team before you, or someone you live with has any vaccinations.

### **Low Red Blood Cell Count (Anemia)**

Your red blood cells are responsible for carrying oxygen to the tissues in your body. When the [red cell count is low](#), you may feel tired or weak. You should let your oncology care team know if you experience any shortness of breath, difficulty breathing, or pain in your chest. If the count gets too low, you may receive a blood transfusion.

### **Low Platelet Count (Thrombocytopenia)**

Platelets help your blood clot, so when the [count is low](#) you are at a higher risk of bleeding. Let your oncology care team know if you have any excess bruising or bleeding, including nose bleeds, bleeding gums, or blood in your urine or stool. If the platelet count becomes too low, you may receive a transfusion of platelets.

- Do not use a razor (an electric razor is fine).
- Avoid contact sports and activities that can result in injury or bleeding.
- Do not take aspirin (salicylic acid), non-steroidal, anti-inflammatory medications (NSAIDs) such as Motrin/Advil (ibuprofen), Aleve (naproxen), Celebrex (celecoxib), etc. as these can all increase the risk of bleeding. Please consult with your healthcare team regarding the use of these agents and all over-the-counter medications/supplements while on therapy.
- Do not floss or use toothpicks and use a soft-bristle toothbrush to brush your teeth.

### **Loss or Thinning of Scalp and Body Hair (Alopecia)**

Your hair may become [thin, brittle, or may fall out](#). This typically begins two to three weeks after treatment starts. This hair loss can be all body hair, including pubic, underarm, legs/arms, eyelashes, and nose hairs. The use of scarves, wigs, hats, and hairpieces may help. Hair generally starts to regrow soon after treatment is completed. Remember your hair helps keep you warm in cold weather, so a hat is particularly important in cold weather or to protect you from the sun.

### **Nausea and/or Vomiting**

Talk to your oncology care team so they can prescribe medications to help you manage [nausea and vomiting](#). In addition, dietary changes may help. Avoid things that may worsen the symptoms, such as heavy or greasy/fatty, spicy or acidic foods (lemons, tomatoes, oranges). Try saltines, or ginger ale to lessen symptoms.

Call your oncology care team if you are unable to keep fluids down for more than 12 hours or if you feel lightheaded or dizzy at any time.

### **Diarrhea**

Your oncology care team can recommend medications to relieve [diarrhea](#). Also, try eating [low-fiber](#), bland foods, such as white rice and boiled or baked chicken. Avoid raw fruits, vegetables, whole-grain breads, cereals, and seeds. Soluble fiber is found in some foods and absorbs fluid, which can help relieve diarrhea. Foods high in soluble fiber include applesauce, bananas (ripe), canned fruit, orange sections, boiled potatoes, white rice, products made with white flour, oatmeal, cream of rice, cream of wheat, and farina. Drink 8-10 glasses of non-alcoholic, un-caffeinated fluid a day to prevent dehydration.

## Mouth Ulcers (Mucositis)

Certain cancer treatments can cause [sores or soreness in your mouth](#) and/or throat. Notify your oncology care team if your mouth, tongue, inside of your cheek or throat becomes white, ulcerated or painful. Performing [regular mouth care](#) can help prevent or manage mouth sores. If mouth sores become painful, your doctor or nurse can recommend a pain reliever.

- Brush with a soft-bristle toothbrush or cotton swab twice a day.
- Avoid mouthwashes that contain alcohol. A baking soda and/or salt with warm water mouth rinse (2 level teaspoons of baking soda or 1 level teaspoon of salt in an eight-ounce glass of warm water) is recommended 4 times daily.
- If your mouth becomes dry, eat moist foods, drink plenty of fluids (6-8 glasses), and suck on sugarless hard candy.
- Avoid smoking and chewing tobacco, drinking alcoholic beverages, and citrus juices.

## Nail and Skin Changes

Your fingernails/toenails may become dark, brittle, or fall off. You may notice dry skin or changes in the color or tone of your skin. Your skin will be more sensitive to the sun, which can result in severe sunburn or rash. Sun sensitivity can last even after chemotherapy is completed. Avoid the sun between 10-2 pm, when it is strongest. Wear sunscreen (at least SPF 15) every day, wear sunglasses and long sleeves/pants to protect your skin. Keep your fingernails and toenails clean and dry. You may use nail polish, but do not wear fake nails. If any nails fall off, clean the nail bed well with soap and water and cover with a bandaid.

## Important but Less Common Side Effects

- **Radiation Recall:** Radiation recall is when the administration of a medication causes a skin reaction that looks like a sunburn (redness, swelling, soreness, peeling skin) in areas where radiation was previously given. Notify your oncology team if you notice this side effect. Treatment can include topical steroid ointments and a delay in your next chemotherapy dose.
- **Tumor Lysis Syndrome:** If there are a large amount of tumor cells in your body prior to treatment, you are at risk for tumor lysis syndrome. This happens when the tumor cells die too quickly and their waste overwhelms the body. You may be given a medication (allopurinol) and IV fluids to help prevent this. If you experience nausea, vomiting, diarrhea or become lethargic (drowsy, sluggish), notify your oncology team right away. TLS can affect your kidney function. Your provider will monitor your kidney function with blood work. Notify your provider if you have little or no urine output.

## Sexual & Reproductive Concerns

This drug may affect your reproductive system, resulting in the menstrual cycle or sperm production becoming irregular or stopping permanently. Women may experience menopausal effects including hot flashes and [vaginal dryness](#). In addition, the desire for sex may decrease during treatment.

Exposure of an unborn child to this medication could cause birth defects, so you should not become pregnant or father a child while on this medication. Women should use effective birth control during and for 6 months after treatment, even if your menstrual cycle stops. Men should use condoms during and for three months after treatment even if you believe you are not producing sperm. If you have a pregnant partner, you should use condoms during and for 10 days after the last dose. You may want to consider sperm banking or egg harvesting

if you may wish to have a child in the future. Discuss these options with your oncology team. You should not breastfeed while receiving this medication.

## Vinblastine (Velban®, Alkaban AQ)

**Pronounce:** vin-BLAS-teen

**Classification:** Antimicrotubule Agent/Vinca Alkaloid

### About Vinblastine (Velban®, Alkaban AQ)

Vinblastine is a member of the vinca alkaloids family of chemotherapy agents. These medications work by interfering with cell division, which leaves the tumor unable to grow and spread. Vinblastine was developed from the Madagascar periwinkle plant.

### How to Take Vinblastine

This medication is administered intravenously (IV, into a vein). Your dose and dosing schedule is based on your size and the type of cancer being treated.

This medication is a vesicant. Even when carefully and correctly administered by trained personnel, this drug may cause a feeling of burning and pain. There is a risk that this medication may leak out of the vein at the injection site, causing tissue damage that can be severe. If the area of injection becomes red, swollen, or painful at any time during or after the injection, tell your provider right away. Do not apply anything to the site unless instructed by your provider.

The blood levels of this medication can be affected by certain foods and medications, so they should be avoided. These include: grapefruit, grapefruit juice, ketoconazole, rifampin, phenytoin, St. John's wort, and many anti-fungal medications. Be sure to tell your healthcare provider about all medications and supplements you take.

### Possible Side Effects of Vinblastine

There are a number of things you can do to manage the side effects of vinblastine. Talk to your provider about these recommendations. They can help you decide what will work best for you. These are some of the most common or important side effects:

#### Constipation

Vinblastine can cause serious constipation, abdominal (belly) pain, and can even cause a blockage or stoppage of the bowel (called paralytic ileus) if not treated right away. There are several things you can do to prevent or relieve constipation. Include fiber in your diet (fruits and vegetables), drink 8 to 10 glasses of non-alcoholic fluids a day, and keep active. A stool softener once or twice a day may prevent constipation. If you do not have a bowel movement for 2 to 3 days, call your provider for [suggestions to relieve the constipation](#).

#### Neurotoxicity

This is a toxicity that affects your nerves. The most common effect is called [peripheral neuropathy](#), which affects the nerves in the hands and feet, causing numbness or tingling. This can get progressively worse with the more doses you get and can cause problems with balance or walking. In some people, the symptoms slowly get better after the medication is stopped, but for some, it never goes away completely. You should let your provider know if you have numbness or tingling in your hands and feet, as they may need to change the dose of your medication.

This medication can also cause neurologic toxicity that causes depression, headache, fatigue, dizziness, and seizures. It can also cause toxicity of the cranial nerves, which affects your vocal cords (changes in voice), eyes (visual changes), or facial nerves (drooping of the face or mouth). Patients can develop severe pain in the jaw

soon after the first treatment with vincristine, which is caused by the medication affecting the nerves. If you have any of these problems, call your provider right away.

## Low White Blood Cell Count (Leukopenia or Neutropenia)

White blood cells (WBC) are important for fighting infection. While receiving treatment, your [WBC count can drop](#), putting you at a higher risk of getting an infection. You should let your provider know right away if you have a fever (temperature greater than 100.4°F or 38°C), sore throat or cold, shortness of breath, cough, burning with urination, or a sore that doesn't heal.

### Tips to preventing infection:

- [Washing hands](#), both yours and your visitors, is the best way to prevent the spread of infection.
- Avoid large crowds and people who are sick (i.e.: those who have a cold, fever or cough or live with someone with these symptoms).
- When working in your yard, wear protective clothing including long pants and gloves.
- Do not handle pet waste.
- Keep all cuts or scratches clean.
- Shower or bathe daily and perform frequent [mouth care](#).
- Do not cut cuticles or ingrown nails. You may wear nail polish, but not fake nails.
- Ask your provider before scheduling dental appointments or procedures.
- Ask your provider before you, or someone you live with, has any vaccinations.

## Mouth Ulcers (Sores)

Certain cancer treatments can cause [sores or soreness in your mouth](#) and/or throat. Call your provider if your mouth, tongue, inside of your cheek or throat becomes white, ulcerated or painful. Performing [regular mouth care](#) can help prevent or manage mouth sores. If mouth sores become painful, your provider can recommend a pain reliever.

- Brush with a soft-bristle toothbrush or cotton swab twice a day.
- Avoid mouthwashes that contain alcohol. A baking soda and/or salt warm water mouth rinse (2 level teaspoons of baking soda or 1 level teaspoon salt in an eight-ounce glass of warm water) is recommended 4 times daily.
- If your mouth becomes dry, eat moist foods, drink plenty of fluids (6 to 8 glasses), and suck on sugarless hard candy.
- Avoid smoking and chewing tobacco, drinking alcoholic beverages, and citrus juices.

## Loss or Thinning of Scalp and Body Hair (Alopecia)

Your hair may become [thin, brittle, or may fall out](#). This often begins two to three weeks after treatment starts. This hair loss can be all body hair, including pubic, underarm, legs/arms, eyelashes, and nose hairs. The use of scarves, wigs, hats, and hairpieces may help. Hair generally starts to regrow soon after treatment is completed. Remember your hair helps keep you warm in cold weather, so a hat is important in cold weather or to protect you from the sun.

## High Blood Pressure

This medication can cause high blood pressure (hypertension). Patients should have their blood pressure checked regularly during therapy.

## Decrease in Appetite or Taste Changes

[Nutrition](#) is an important part of your care. Cancer treatment can affect your appetite and, in some cases, the side effects of treatment can make eating difficult. Ask your provider about nutritional counseling services at

your treatment center to help with food choices.

- Try to eat five or six small meals or snacks throughout the day, instead of 3 larger meals.
- If you are not eating enough, nutritional supplements may help.
- You may have a metallic taste or find that food has no taste at all. You may dislike foods or beverages that you liked before receiving cancer treatment. These symptoms can last for several months or longer after treatment ends.
- Avoid any food that you think smells or tastes bad. If red meat is a problem, eat chicken, turkey, eggs, dairy products, and fish without a strong smell. Sometimes cold food has less of an odor.
- Add extra flavor to meat or fish by marinating it in sweet juices, sweet and sour sauce, or dressings. Use seasonings like basil, oregano, or rosemary to add flavor. Bacon, ham, and onion can add flavor to vegetables.

## Fatigue

**Fatigue** is very common during cancer treatment and is an overwhelming feeling of exhaustion that is not usually relieved by rest. While on cancer treatment, and for a period after, you may need to adjust your schedule to manage fatigue. Plan times to rest during the day and conserve energy for more important activities. Exercise can help combat fatigue. A simple daily walk with a friend can help. Talk to your provider for helpful tips on dealing with this side effect.

## Nausea and/or Vomiting

Talk to your provider so they can prescribe medications to help you manage **nausea and vomiting**. In addition, dietary changes may help. Avoid things that may worsen the symptoms, such as heavy or greasy/fatty, spicy or acidic foods (lemons, tomatoes, oranges). Try antacids, (e.g. milk of magnesia, calcium tablets such as Tums), saltines, or ginger ale to lessen symptoms.

Call your provider if you are unable to keep fluids down for more than 12 hours or if you feel lightheaded or dizzy at any time.

## Important but Less Common Side Effects

- **Urinary retention:** Some patients may be unable to urinate (even when you feel that you need to). If you notice you are unable to urinate, you should call your provider right away or go to the emergency room.
- **Pain in tumor-containing tissue:** Some patients may have pain in tumor-containing tissue. This is thought to occur due to swelling of that area during its response to treatment.
- **Radiation Recall:** This medication may cause radiation recall. It may present as a skin reaction that looks like a sunburn (redness, swelling, soreness, peeling skin) in areas where radiation was previously given. Tell your provider if you notice this side effect. Treatment can include topical steroid ointments and a delay in your next chemotherapy dose.

## Sexual & Reproductive Concerns

This drug may affect your reproductive system, resulting in your menstrual cycle or sperm production becoming irregular or stopping permanently. In addition, the desire for sex may decrease during treatment.

Exposure of an unborn child to this medication could cause birth defects, so you should not become pregnant or father a child while on this medication. Effective birth control for females is necessary during treatment and for at least 7 months after your last dose, even if your menstrual cycle stops. Effective birth control for males is necessary during treatment and for at least 4 months after your last dose, even if you believe you are not producing sperm. You may want to consider sperm banking or egg harvesting if you may wish to have a child in the future. Discuss these options with your provider. You should not breastfeed while receiving this medication and for at least 1 week after your last dose.

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