



BLOOD Transfusion

What you need to know

You or your loved one has been diagnosed with a type of blood cancer. One of the treatments your doctor may offer is a blood transfusion. What does it mean and how does it work?

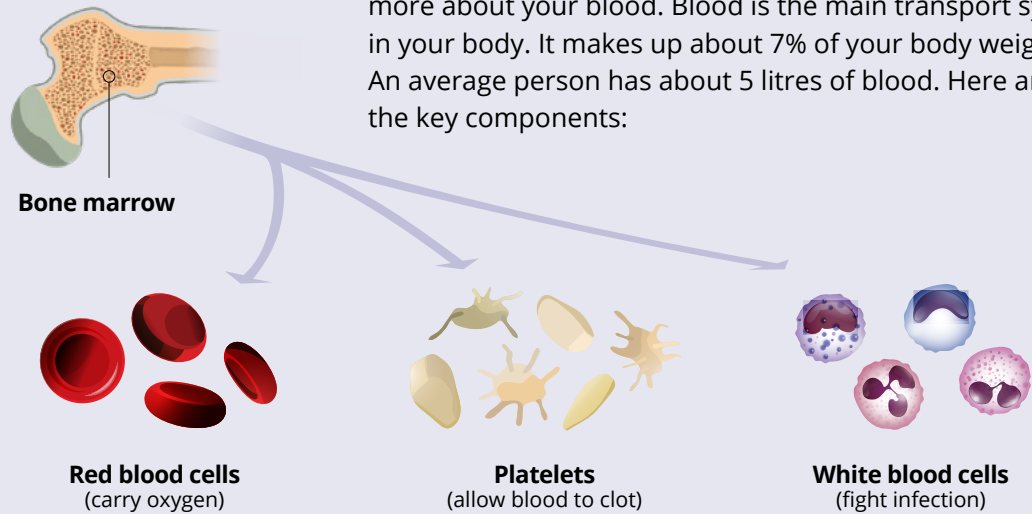
This fact sheet will help you:

- Get an overview of blood and blood cancers
- Understand blood transfusion and the different types
- Address your safety concerns
- Learn about possible complications



Your blood and blood cancers

To understand blood transfusion treatment, it helps to know more about your blood. Blood is the main transport system in your body. It makes up about 7% of your body weight. An average person has about 5 litres of blood. Here are the key components:



| | |
|--------------------------|--|
| Bone marrow | is the soft, spongy material inside your bones where blood cells form. Blood passes through the marrow and picks up red and white cells and platelets for circulation. |
| Red blood cells | contain a protein called hemoglobin that allows blood to carry oxygen from the lungs to all tissues in the body. |
| White blood cells | help your body fight infection. There are five different types: neutrophils, eosinophils, basophils, monocytes, and lymphocytes. |
| Platelets | help your blood to clot (stop bleeding). |
| Plasma | is the liquid part of blood that contains the blood cells. |

Blood transfusions in blood cancer treatment

- Blood transfusion involves giving a person blood by intravenous (IV), or in the vein.
- The need for a transfusion depends on the type of blood disease and the type of drugs used for treatment.
- Leukemia, myeloma, and many types of lymphoma interfere with the normal production of blood cells. This results in a low blood cell count and a need for a transfusion.
- With a blood or marrow stem cell transplant, blood transfusions are often needed because of the side effects of chemotherapy.

Almost every Canadian with leukemia will need a blood transfusion as part of their treatment.

In Canada, the benefits of transfusion usually outweigh any safety concerns for people with a blood cancer.

What is a blood transfusion?

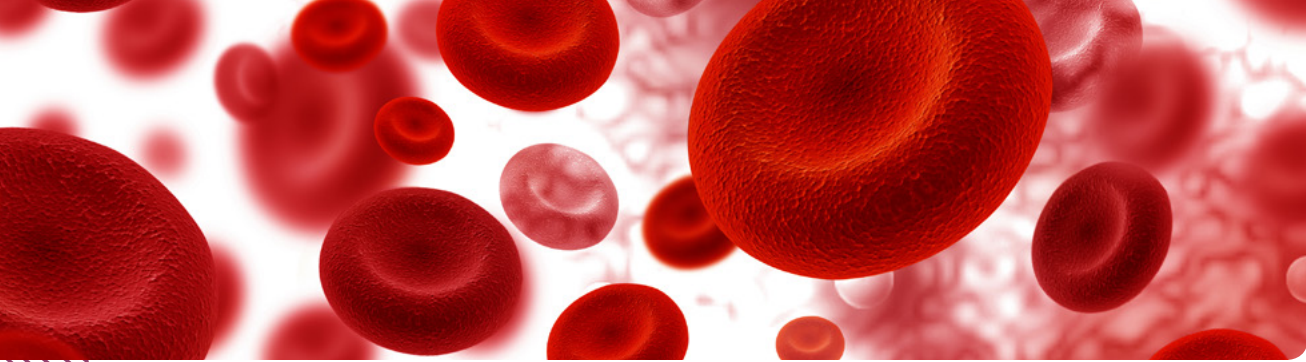
Blood can't be made artificially. Canadians who have a blood cancer depend on volunteers to give blood. There are three steps:

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|-----------------------------------|---|
| Blood donation | Blood is collected from a donor. Anyone who is 17 years and older, weighs at least 50 kg (110 lbs), and is in good health can donate blood every 2 months. |
| Preparing blood components | Blood products are collected, separated, and stored in plastic pouches. Each component has to be prepared within a certain time after the blood is collected. It must be stored at a specific temperature and only for a limited before it is no longer usable. The blood bag is spun gently using a centrifuge, allowing the heavier red cells to settle at the bottom and the lighter plasma (containing platelets) to be separated into a different bag. |
| Blood transfusion | You receive donated blood through a small tube placed in a vein in your arm. The blood can include red blood cells, platelets, plasma, and cryoprecipitate (frozen blood product prepared from blood plasma). This is prepared from each unit of whole blood that is donated. |

Types of blood transfusions

Blood transfusions can be given as a whole unit of blood or the components can be separated. Eight types of blood transfusions are used for blood cancers:

| Type of transfusion | Description |
|--|---|
| White cells | This is sometimes used for severe infections when antibiotics and antifungal drugs are not working. |
| Red cells | This is given to treat low red blood cell counts (anemia) that can cause weakness, fatigue, shortness of breath, and rapid heartbeat. |
| Platelets | This is given to prevent or treat bleeding caused by severely low platelet counts (thrombocytopenia). |
| Granulocytes | This is used when an infection does not respond to antibiotics. It can help while white blood cell counts recover. |
| Plasma and cryoprecipitate (cryo) | Fresh frozen plasma (FFP) and cryo are given to people who have low levels of blood-clotting proteins. |
| Intravenous gamma globulin (IVIG) | IVIG is prepared from a pool of donor plasma. It is sometimes given to people with blood diseases to supplement their low levels. |
| Albumin | Albumin is a common human blood protein. |
| Palliative | This is used as palliative care: not to cure the disease, but to help manage pain and discomfort and improve quality of life. |



Safety of blood transfusions

In medically advanced countries such as Canada, the benefits of transfusion usually outweigh any safety concerns for people who have blood cancer. The risk of transmitting viral diseases such as human immunodeficiency virus (HIV) by blood transfusion has dropped dramatically in the last 25 years.

Safety measures

Screening donors and blood:

- Blood donors donate voluntarily. They are not paid. This means people who might donate for money and might not be honest about their health history are not part of the pool of donors.
- All potential donors receive written information urging them not to donate if they are at risk of transmitting a disease through their blood.
- Once a donor comes to a blood donation site, a trained team screens them by getting a very detailed medical history and giving them a physical exam.
- The donor's arm is carefully cleaned. Blood is then collected using a new sterile needle and bag. Needles are never reused, so there is no risk of the donor getting an infection.

Testing for infectious diseases

All donated blood in Canada is tested for the following diseases:

- Hepatitis B
- Hepatitis C
- HIV-1 and 2
- Human T-Cell lymphotropic virus HTLV-I and II
- Syphilis
- West Nile Virus

Removing white blood cells

White blood cells contaminate the red blood cells and platelets. White blood cells are not used for a person in treatment because they can cause reactions. Special filters remove up to 99.99% of these cells.

Reactions to blood transfusions

Most transfusions do not cause a negative reaction. Reactions can happen when you get any type of blood component. Symptoms during or soon after transfusion can include:

- Fever
- Chills
- Nausea
- Pain at the site of the transfusion
- Shortness of breath
- Drop in blood pressure
- Dark or red urine
- Rash

If you notice any change in your condition during or after a transfusion, even a small one, tell your healthcare team right away. It's important to spot a reaction early to avoid complications. Your healthcare team can stop the transfusion or decide if your reaction from the transfusion requires any treatment.

Types of complications

A negative reaction is not common, but these complications can happen:

| Complication | Description |
|---|---|
| Fever | Fever is the most common reaction. It can come with chills and cause shortness of breath. These reactions are usually not serious. They are more likely to happen during platelet transfusions. |
| Hives | Hives are also common. They are usually not dangerous, but they cause itching. Hives can be treated with an antihistamine. If you have no other symptoms, the transfusion can be restarted slowly once the hives have gone away. If hives appear on your face or neck, seek help immediately as they may signal a severe allergic reaction. |
| Transfusion-related acute lung injury (TRALI) | For some people with blood cancer, they may produce antibodies against certain antigens in transfused blood. This does not always cause symptoms, but it's important to know about the issue if more transfusions are needed. |
| Creating antibodies to the donor's blood | For some people with blood cancer, they may produce antibodies against certain antigens in transfused blood. This does not always cause symptoms, but it's important to know about the issue if more transfusions are needed. |
| Damage or destruction of red cells (hemolytic) | This is rare. If it happens, it is the most severe and acute (intense) reaction to blood transfusions. Treatment includes keeping your blood pressure steady and preventing kidney damage and bleeding. |
| Transmission of viral infections | This is a risk because blood is a biological substance. The risk of getting a viral infection is small. |
| Transmission of cytomegalovirus (CMV) | CMV is a common virus, but in premature babies and people receiving a blood or marrow stem cell transplant, it can cause serious problems like pneumonia. |
| Graft-versus-host disease (GVHD) | GVHD happens when donor white cells (lymphocytes) attack the recipient's skin, liver, bowel, and bone marrow after a blood or marrow stem cell transplant. It is rare but can happen if you have decreased immune system function from your blood cancer. |

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LEUKEMIA &
LYMPHOMA
SOCIETY
OF CANADA*

Never hesitate to contact us, we're here to help!

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