



Blood Transfusion: Information for Patients

What is a blood transfusion and why may I need one?

A blood transfusion is a medical procedure where blood is given to you intravenously (IV), which is through a small tube inserted into your vein. You might be prescribed a blood transfusion to replace blood that has been lost due to an accident, operation, or illness. Other reasons may include your body is not making enough blood or your blood is not working properly. Health care providers recommend blood transfusion when the benefits outweigh the possible risks. Blood has 3 main parts, known as components. You may need transfusion of one or more blood components. The number of bags transfused will depend on your health condition.

Component	What is it? How can it help?
1. Red Blood Cell (RBC)	RBC are cells containing hemoglobin. Hemoglobin carries oxygen from your lungs to the rest of your body. Oxygen is needed for the body's cells to work properly.
2. Platelets	Platelets are small sticky cells in your blood. They are the first responders in forming a clot to stop bleeding.
3. Plasma *	Plasma is the straw-colored liquid part of your blood. It helps your body recover from injury, prevents infection and transports important substances throughout the body such as blood components and proteins required for clotting and other various functions.

* Blood Products: Plasma from thousands of donations is combined to make many different blood products from plasma proteins. These plasma-derived protein products can be transfused to treat various illnesses such as immune and neurological conditions, liver disease, serious burns and inherited bleeding disorders.

Where does the blood come from and how is it chosen for me?

In Canada, blood is collected by Canadian Blood Services and Héma-Québec from healthy volunteer donors. Donors are screened through a set of questions about their health, personal, and travel history. Each blood donation is tested for infectious diseases that could be passed on by transfusion. If the tests are negative, the blood is then divided into the three main components and sent to hospitals in sealed plastic bags.

At the hospital, the blood components are carefully stored until needed. If a transfusion is prescribed, your medical and transfusion history will be reviewed. A sample of your blood will be tested. These steps ensure your blood type and the component are a match, and the transfusion is safe for you.

Are there any alternatives to a blood transfusion?

There are some alternatives, (such as medications) which may or may not be useful in your particular health condition. Discuss options available to you with your health care provider.

What are the possible risks of a transfusion?

Canada's blood supply is safe, but blood transfusion is not without risks. Risks include infectious (passing on a viral or bacterial infection) and non-infectious outcomes (e.g., an allergic reaction or breakdown of red blood cells). Refer to the table at the end of this document for a list of possible risks.

Discuss your questions or concerns about the risks of transfusion with your health care provider.

Can I refuse a blood transfusion?

Yes, it is a personal choice to receive or not to receive a blood transfusion. To make an informed choice, discuss the details of your specific medical condition with your health care provider. If you choose to refuse the transfusion, your health care provider will explain the possible outcomes of this choice.

What happens before, during and after a transfusion?

Before: Your health care provider will explain the transfusion benefits and risks specific to your health. You will be asked to sign a consent form. A sample of your blood will be taken and tested. An IV will be started. Your temperature, blood pressure, pulse and breathing will be checked.

During: The transfusion may take up to four hours for each bag of component you will be receiving. You will be watched carefully and your temperature, blood pressure, pulse and breathing will be checked regularly. You must tell your health care provider right away if you notice any of the following signs or symptoms:

Fever	Itching	Trouble breathing
Chills	Facial swelling (eyes, lips, tongue)	Dark or tea colored urine
Rash	Throat soreness/swelling	New pain (back, chest, IV site)
Feeling any different than usual		

Most transfusion signs or symptoms are mild, can be treated and go away quickly. If you develop signs or symptoms, the transfusion will be stopped. In some cases, you may be given medications and the transfusion may be re-started.

After: Your temperature, blood pressure, pulse and breathing will be checked. You should tell your health care provider if you notice any signs or symptoms listed above within 4 hours after the transfusion is finished, or if you have new trouble breathing, within 24 hours after the transfusion is finished. If you have been sent home and you can't reach your health care provider, call 911 or go to the closest Emergency Department. If you have questions or concerns regarding symptoms, follow up with your health care provider.

Risks of Transfusion

The table below describes possible transfusion risks; the bigger the second number, the lower the risk. For example, 1 in 10,000 is a lower risk than 1 in 100.

PROBABILITY	RISK
1 in 13	Red blood cell antibodies that may cause difficulties for future pregnancy or transfusion
1 in 100	Hives (skin rash) or itching
1 in 100	Heart failure (the heart is not able to pump the blood around the body as well as it should; trouble breathing is often a symptom)
1 in 100	Fever per bag of platelets
1 in 300	Fever per bag of red blood cells (RBC)
1 in 2,500	Delayed hemolysis (some red blood cells are broken down)
1 in 10,000	Lung injury (severe trouble breathing is often a symptom)
1 in 10,000	Bacterial sepsis (infection) per bag of non-pathogen reduced platelets
1 in 40,000	Anaphylaxis (extremely severe, possibly life-threatening but treatable allergic reaction)
1 in 200,000	Death from bacterial sepsis (infection) per bag of non-pathogen reduced platelets
1 in 250,000	Bacterial sepsis (infection) per bag of RBC
1 in 354,000	Wrong ABO (blood) group (does not match your blood) per bag of RBC, this can give a mild or serious reaction
1 in 500,000	Death from bacterial sepsis (infection) per bag of RBC
Less than 1 in 1,000,000	Transmission of West Nile Virus
1 in 2,000,000	Residual risk of hepatitis B
1 in 4,000,000	Transmission of Chagas Disease. Chagas Disease is caused by a parasite.
1 in 12,900,000	Residual risk of human immunodeficiency virus (HIV)
1 in 27,100,000	Residual risk of hepatitis C
Less than 1 in 1 billion	Transmission of human T-cell lymphotropic virus (HTLV) (HTLV may cause a form of cancer in the blood)

Callum JL, Pinkerton PH, Lin Y, Cope S, Karkouti K, Lieberman L, Pendergrast JM, Robitaille N, Tinmouth AT, Webert KE. Bloody easy 5.1 blood transfusions, blood alternatives and transfusion reactions a guide to transfusion medicine. 5th ed. Toronto: Ontario Regional Blood Coordinating Network; 2022, 2023. 145p.