Alternatives to blood transfusions

Blood supplies are limited. Many worry about the possibility of contracting an illness from blood transfusions. For these reasons alternative options to blood transfusions are always being made. These include:

- Using new procedures and medicines so that as little blood as possible needs to be transfused and;
- Improving surgical methods to prevent or reduce bleeding

In some cases however, transfusions will still be necessary, due to blood loss.

Can I use my own blood?

Some patients feel that it is safer to give their own blood to be stored for their operation. This is known as *autologous transfusion.* If you are healthy enough and your surgeon agrees you can give your own blood at CBS. This must be done at least ten days before your operation, and you should be taking iron pills. Even in cases such as this, the doctor will still try to avoid giving blood transfusions if it is possible.

What else can I do?

If you are going to have an operation, ask your doctor about the possibility of a blood transfusion. Have your family doctor or surgeon check your hemoglobin level. If it is low, talk to them about what you can do to raise it before your operation.

Eating foods that are high in iron and taking iron pills, with permission from your doctor, are two ways of making your hemoglobin level higher. There is medication that can increase the number of red blood cells your body is able to make, but they may not work for everyone. Talk to your doctor about these products if you think you may need to have a transfusion.

These methods can take weeks to work and should be considered early.

Are Transfusions Safe?

Some patients are worried about getting AIDS or hepatitis from blood. Canadian Blood Services ensures that everything possible is done to make sure that blood products are safe. Canada's blood supply is one of the safest in the world.

Estimated risk per unit red cells transfused:

HIV (AIDS)	1 in 10,000,000 *
Hepatitis B	1 in 72,000 *
Hepatitis C	1 in 3,000,000 *
West Nile Virus	1 in 12,000 - 15,000 ○
Mild Allergic Reaction	1in 250 ■
Severe Allergic Reaction	1 in 23,000 ■
Bacterial Contamination:	1 in 143,000 ■
Acute Hemolytic Reaction	1 in 72,000 ■

○During Mosquito Season
Canadian Blood Services, Customer Letter #2003-10.

*Chiavetta et al. CMAJ 2003; 169(8):767-773.

■Kleinman, Chan & Robillard. Transfusion Medicine Reviews 2003; 17(2):120-162.

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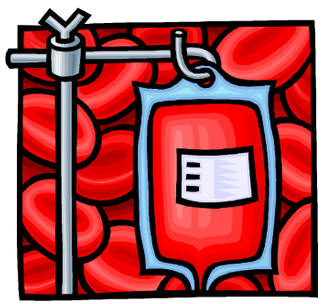
Information about Blood Transfusions and Alternatives



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You may need to receive blood or blood components (parts of the blood) while you are in the hospital. This is called a blood transfusion.

The two most common reasons for blood transfusions are:

- To replace blood lost during an operation, or after an accident
- To treat anemia (lack of red blood cells)

It is normal for some blood to be lost during certain operations. A small amount of blood can be replaced by liquid with different types of salts or sugars in it. If larger amounts of blood are lost, the doctor may decide a blood transfusion is necessary.

Anemia has a number of causes, but the effects are the same; your body will not have enough red cells to carry the oxygen your body needs. As a result, you may feel tired and breathless. It is often possible to treat anemia with medication and vitamins but sometimes, a blood transfusion is necessary.

What is Blood?

Blood is a *living tissue* composed of two parts. The liquid part called plasma, is made of water, salts, and proteins. About half of your blood is plasma. The rest of your blood contains cells such as red blood cells, white blood cells and platelets.

Hemoglobin makes blood look red. It is a protein in red blood cells that carries oxygen from the lungs to the rest of the body, and brings the waste product, carbon dioxide, back to the lungs to be exhaled.

Hematocrit is the percentage of red blood cells in relation to how much blood you have. A low hematocrit may mean you have anemia (lack of red blood cells).

Blood Group Red blood cells have a protein covering that determine each person's blood group. The four major blood groups are O, A, B and AB. The majority of people have a substance on their red blood cells called the "Rh factor". These people are "Rh positive". The remainder of people are called "Rh negative" because they do not have the Rh factor. This is why a person's blood may be referred to as "A Positive" (group A, Rh positive) or "O negative" (group O, Rh negative).

The most common parts of the blood, or *blood components,* that you may require are:

Red Blood Cells carry oxygen to and from tissues and organs. Red blood cells may be needed during or after surgery. They can also help patients with many different diseases.

Platelets help blood to clot. They may help control bleeding in patients with leukemia and cancer. They also help patients after surgery.

Plasma helps blood to clot in patients having surgery, and those with cancer or immune disorders.

Where does donor blood come from?

Hospitals in Canada receive their blood from the Canadian Blood Services (CBS). Blood is collected from human donors who volunteer. Donors are asked many questions about their health before they donate and their blood is carefully tested. It is disposed of if there are any signs of infection.

What are the benefits of transfusion?

Patients receive blood transfusions for many different medical reasons. They can save lives. For example, if you have too few red blood cells, vital organs such as the brain or heart cannot get the oxygen they need to survive. A loss of clotting factors may mean you will not be able to stop bleeding. Blood transfusions are also used to improve quality of life for people with blood disorders.

What happens when I need a transfusion?

Your doctor or nurse will explain why you need a transfusion and which blood component or products you need.

Before you get a transfusion, *cross matching* of your blood is done by mixing your blood with donated blood. Everything is checked to make sure the match is suited for you. Before you get your transfusion at least two people will check to be sure that the blood you get was tested and prepared for you.

Your vital signs (pulse, breathing rate, temperature & blood pressure) will be measured before, during and after the transfusion. Transfusing one unit of red cells may take 2 to 3 hours. Other blood components, such as platelets, take less time to give. Electronic pumps are often used to control the speed of the transfusion.

Are there any complications?

In some cases, complications do occur. Because blood is a *living tissue* there will always be some reaction while your body accepts this new tissue. A *mild reaction* may include hives, itching, rashes, fever, chills, muscle aches or headache. There may be a feeling of heat where you got the transfusion or along the vein. If you experience any of these symptoms, or feel anything unusual, tell your nurse immediately.

Infectious Diseases:

Canadian Blood Services is very careful in choosing who can donate blood and has up-to-date procedures to test donated blood. Because of this, the chances of getting an infection, like Hepatitis, West Nile Virus or HIV (AIDS) from a transfusion are very low. However, there will always be a chance that you can obtain unknown infections from blood.

Allergic Reactions are usually mild and easily treated. Severe allergic reactions are rare.

Fever Reactions may happen, especially in patients who have had blood transfusions before or have been pregnant. These reactions are usually not severe, but the person receiving the blood transfusion may need to have samples of their blood taken and vital signs may also need to be measured more often until the transfusion is finished.

Acute Hemolytic Reactions are rare. They may be serious and can even cause death. The most common cause of these reactions is a patient getting blood that does not match their blood type. Careful checking of patient information at the time the blood sample is taken for *cross matching* and when the blood is given helps to prevent these reactions.

After the Transfusion:

After you go home your body may react to the transfusion. This is called a "delayed transfusion reaction." A bad cough and trouble breathing may happen up to six hours after your transfusion. You may have a fever, muscle aches and dark urine, with or without other side effects, hours, days or even weeks after the transfusion (usually within 6 days). Bruising may occur up to two weeks after the transfusion.

If you think you are having a bad reaction to your transfusion tell your doctor or nurse *immediately.* If you are at home, call your physician or report to the nearest Emergency Department.