

BLOOD TRANSFUSIONS

# Answers

To Your

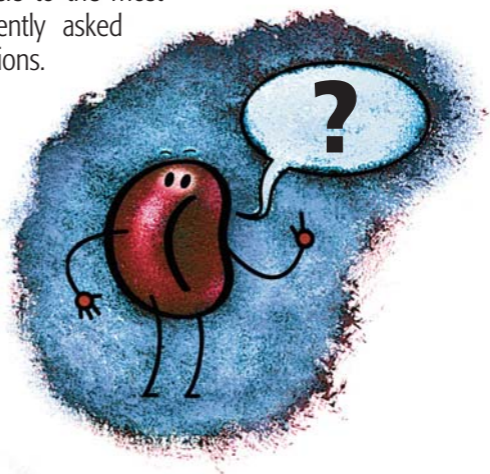
# Questions



Québec    
 

# Answers to Your Questions

This brochure is intended for people who may need a blood or blood product transfusion and for those who regularly receive transfusions. It provides answers to the most frequently asked questions.



## Produced by:

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# Are Blood Transfusions Safe?

Blood transfusions are very safe and, in some cases, may be the only way to save a life. The precautions taken to ensure the quality of blood products are increasingly reliable. Donors are selected based on very strict criteria and all blood donations undergo the most technologically advanced testing to detect known diseases and viruses.

All these measures have reduced the risk of disease transmission to very low levels. In 2007, in Québec, the risk of being infected with AIDS or HIV (the human immunodeficiency virus) as a result of a transfusion is 1 in 13,000,000 transfused units<sup>1</sup>. For hepatitis, which is a liver disease, the risk has been evaluated at 1 in 955,000 units for hepatitis B and 1 in 4,600,000 for hepatitis C<sup>2</sup>. The risks are thus extremely low compared to the benefits of transfusions.

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1. Héma-Québec Circular HQ-07-036. *Risque de transmission des infections virales par la transfusion attribuable à la période muette*, July 2007. (French only)

2. *Ibid.*

# What Is a Blood Transfusion?

A blood transfusion is a treatment that involves giving blood or blood products to a person on the advice of a doctor.

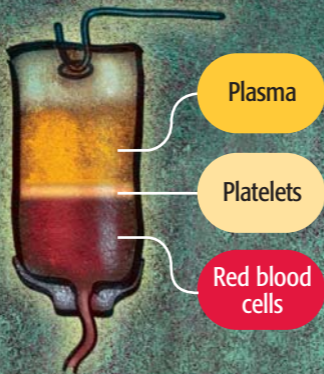
## What Is Blood?

Blood is the liquid circulating in the arteries and veins. It is essential for the body to function properly. Blood transports oxygen, nutrients that nourish the cells of the body, as well as other substances that help fight diseases.

Blood cells are formed in the bone marrow. Blood is made up of red blood cells, white blood cells, and platelets, which are suspended in a liquid called plasma. The adult human body contains an average of five to six litres of blood.

Depending on a person's state of health, one or more of these blood products may be required. Red blood cells, platelets, and plasma are the products most often transfused.

# Blood and Blood Products



## Plasma Derivatives

Clotting factors

Albumin

Immunoglobulins

## Red Blood Cells

A drop of blood contains about five million red blood cells. The red colour is caused by an iron-rich protein in the red blood cells called hemoglobin, which carries oxygen. Red blood cells are transfused when a person has lost a lot of blood, for example as a result of an accident or major surgery. They may also be given to people suffering from anemia.

Red blood cells can be kept for 42 days and are stored at 1 to 6°C.

## White Blood Cells

White blood cells protect the body against bacteria and viruses. As soon as there is an infection, white cells begin to fight it. White blood cell transfusions are extremely rare.

White blood cells can be kept for no more than 24 hours and are stored at 20 to 24°C.

## Platelets

Platelets are smaller than red blood cells. Their most important role is to form blood clots to prevent or stop bleeding. Platelets are transfused when a person has suffered a severe loss of blood, when a person's platelets are not functioning properly, or when there are too few platelets circulating in the person's blood.

Platelets can be kept for up to 5 days and are stored at 20 to 24°C.

## Plasma

Plasma is yellowish in colour and is the liquid part of the blood. Plasma contains proteins that the body needs to function properly. Human blood consists of 55% plasma. Plasma transfusions are given to people with clotting factor deficiencies that could cause significant bleeding during surgery, for example.

Plasma can be kept frozen for up to one year.

## Plasma Derivatives

Concentrated plasma derivatives are obtained using a process known as fractionation. They include clotting factors and proteins such as albumin and immunoglobulins. Plasma derivatives have many uses.

Generally, these products can be kept for over a year.



# Where Do Blood and Blood Products Come From?

Most blood products mentioned in this brochure come from Québec donors through Héma-Québec or from donors in other parts of Canada through Canadian Blood Services. Only plasma used to produce derivatives may come from donors residing outside the country.

## Not Everyone Can Be a Donor!

Blood donors are carefully selected. Only people who meet strict criteria can donate their blood.

People who want to give blood must first show a piece of I.D. and fill out a questionnaire about their state of health and other subjects related to the transmission of certain diseases. This questionnaire is only one step in ensuring quality of our blood



supply. Next, a small drop of blood is collected from the tip of a finger to check whether there is enough iron in the blood for the person to give blood.

Blood is always taken with new, sterile, disposable needles, bags, etc. that are used only once.



## Donors Are Volunteers

In Québec and throughout Canada, people who give blood do so to help others. They are volunteers, which means they are not paid for their blood donations.

Giving blood means giving life. A single blood donation can help save four lives.

## What Tests Are Done on Blood?

All blood donations are thoroughly tested for hepatitis B, hepatitis C, the AIDS virus or HIV (human immunodeficiency virus), syphilis, and the virus responsible for certain blood diseases (HTLV-I/II). Other tests, such as for West Nile virus, are also performed when necessary. **The tests are performed on the day the blood is collected. If the result of one of the tests is inconclusive or positive, the blood must be discarded.**

The blood is also analyzed to determine the blood type (A, B, AB, or O) and whether it is Rh positive (+) or Rh negative (-). At the hospital, before transfusions are given, several other tests are performed to ensure that the blood or blood product selected is the one best suited to the person who will receive the transfusion.

## How Are Blood and Blood Products Transfused?

The method and the time it takes for a transfusion depend on the blood product being given and the health of the person receiving the transfusion. All the equipment used for the transfusion is new, sterile and disposable. It is only used once.

## Red Blood Cells

Red blood cell transfusions take an average of 2 to 4 hours.

## Platelets

Platelet transfusions take an average of 30 minutes to 2 hours.

## Plasma

Plasma transfusions take an average of 1 to 2 hours.

## Plasma Derivatives

The time needed to transfuse plasma derivatives depends on the type of product and the amount to be given.

# What Are the Benefits of a Blood Transfusion?

In Québec, it is estimated that over 75,000 people receive blood or blood product transfusions each year. Because of transfusions, many types of medical and surgical treatments can be provided. For example, transfusions are often given to treat premature babies, for heart surgery and organ transplants, for cancer and anemia treatments, and to people who have lost a lot of blood after an accident.

# What Are the Most Common Adverse Reactions?

Most transfusions pose no problem. Nurses carefully monitor people receiving blood transfusions to check for adverse reactions. However, despite all the precautions that are taken, a transfusion can sometimes cause an adverse reaction, some of which are described below.

## Allergic Reactions

Transfusions cause allergic reactions in less than 1% of people receiving blood or blood products<sup>3</sup>. These reactions can take the form of urticaria (hives) or other skin reactions that usually disappear with proper medication.

## Fever

Transfused blood and blood products can also cause fever, with or without chills. Less than 1% of all transfusions cause this type of reaction, which can also be treated with appropriate medication<sup>4</sup>. In very rare cases, fever can be caused by bacterial contamination of the blood or blood product.



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3. ROBILLARD, P. *Les incidents/accidents transfusionnels signalés au système d'hémovigilance du Québec en 2005*, July 2007, 46 pages. (French only)

4. *Ibid.*

## Alloimmunization (Self-immunization)

After a transfusion, some people develop antibodies that can destroy their red blood cells. This complication, known as “alloimmunization”, generally does not cause any symptoms. However, it can be detected using a blood test. These people are very carefully monitored during future transfusions.

## Other Reactions

Other reactions may occur. For example, a quick increase in the volume of liquid circulating in the veins during a transfusion may cause problems in the elderly or in people with heart problems.

In some cases, minor to severe breathing problems may occur.

Outpatients receiving transfusions should know that adverse reactions can occur once they return home. Such adverse reactions can include skin irritation, fever, chills, jaundice (yellow skin), or back pain. If abnormal symptoms show up, the patient should immediately go to a hospital, local community health centre (CLSC), medical clinic, or other health care institution. **Patients who have experienced an adverse reaction or abnormal symptom after a transfusion should always advise their doctor of this before receiving another transfusion.**

Strict measures ensure that the right product is administered to the right person and that no errors occur that could cause serious complications. In addition, when taking a blood sample, and before each transfusion, medical staff must carefully check the name of the person receiving the transfusion to avoid errors.

# Can Other Treatments Be Used Instead of Transfusions?

For some people, there may be alternatives to receiving blood or blood products from another person (allogeneic transfusion). These people can choose the treatment they prefer after talking with their doctor.

## Autologous Blood Donations

People can have their own blood (autologous donation) stored for upcoming surgery. Their doctor will decide whether this option is appropriate based on the type of surgery to be performed and the person's health. The doctor will also inform the person of the risks and requirements associated with this option and whether it is possible under the circumstances.

## Recovery of Blood During Surgery

It is sometimes possible to recover blood lost during surgery and immediately return it to the patient's bloodstream. This option should be discussed with your doctor as it is not always appropriate and may not be available at certain health care institutions.

## Use of Medication

In certain very specific cases, medication can reduce or eliminate the need for blood transfusions. Once again, your doctor is the person best qualified to provide information on this option.

# Informed Consent For a Blood Transfusion

As with any medical intervention or treatment, a doctor must obtain free and informed consent from patients, except during an emergency, before providing a transfusion.

Doctors are obliged to provide their patients with all relevant information about the proposed treatment and possible alternatives. They must be sure that patients understand the benefits and risks associated with transfusions and answer any questions they may have. The final decision is up to the patient. A doctor can provide advice but cannot force a person to agree to a transfusion.



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Revised and validated by CMT of Charles-LeMoynes Hospital: 2007



**Blood Is a  
Source of Life**

**Transfusions  
Help Save Lives**

**For more information  
on transfusions,  
visit the following websites:**

- Héma-Québec  
[www.hema-quebec.qc.ca](http://www.hema-quebec.qc.ca)
- Canadian Blood Services  
[www.bloodservices.ca](http://www.bloodservices.ca)
- Direction de la biovigilance  
[www.msss.gouv.qc.ca/systeme-du-sang](http://www.msss.gouv.qc.ca/systeme-du-sang)

[www.msss.gouv.qc.ca](http://www.msss.gouv.qc.ca)

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