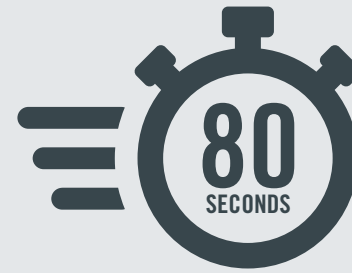


The transfusion route



Every 80 seconds, someone in Québec needs blood...

It may be following an accident, during surgery or to treat an illness: **1000 donations per day are needed.** The fact that they are irreplaceable makes them all the more precious.

WHAT IS BLOOD?

Blood is the fluid that flows through the body's veins and arteries. It is made up of plasma, a yellow liquid composed of 90% water in which three types of cells are suspended: **red blood cells**, **white blood cells** and **platelets**.

WHITE BLOOD CELLS

They protect the body from infections. They are said to be white because they form a whitish paste when they are separated from the other blood cells.

PLATELETS

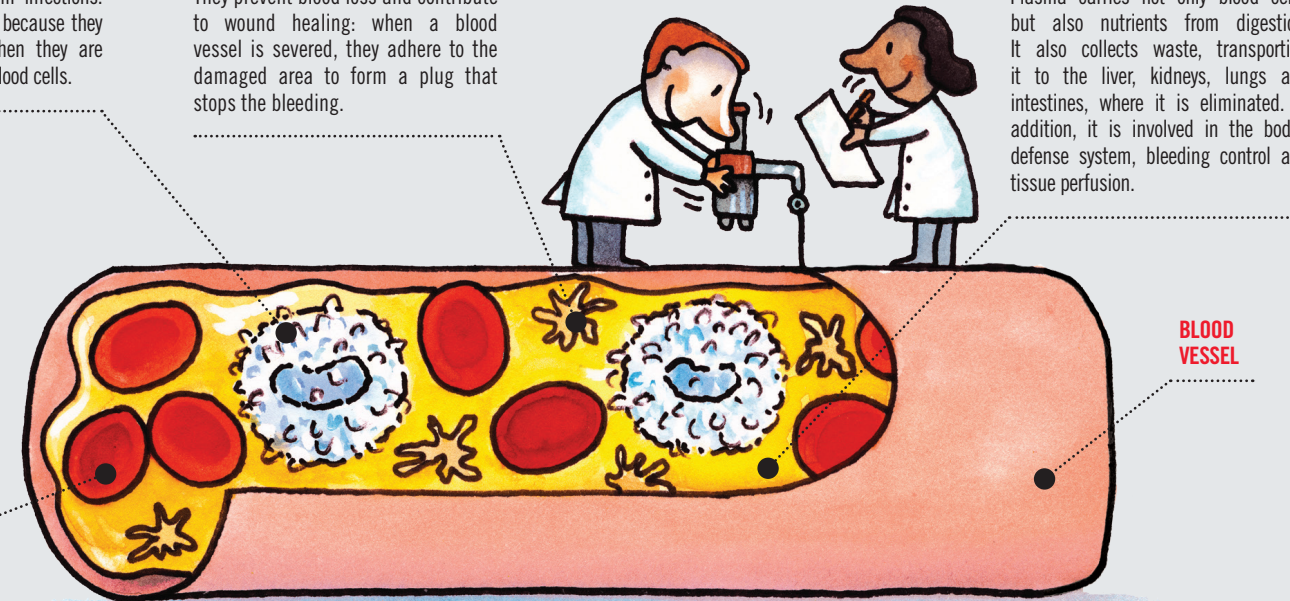
They prevent blood loss and contribute to wound healing: when a blood vessel is severed, they adhere to the damaged area to form a plug that stops the bleeding.

PLASMA

Plasma carries not only blood cells, but also nutrients from digestion. It also collects waste, transporting it to the liver, kidneys, lungs and intestines, where it is eliminated. In addition, it is involved in the body's defense system, bleeding control and tissue perfusion.

RED BLOOD CELLS

They carry oxygen from the lungs to the various organs and carbon dioxide from the organs to the lungs, where it is expelled. They contain hemoglobin, a protein containing iron that gives blood its red color.



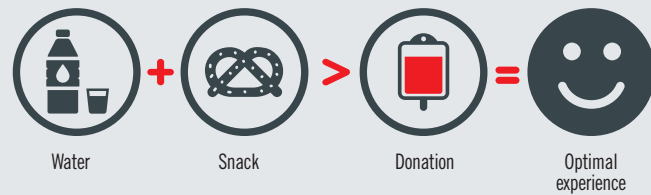
BLOOD VESSEL

WHO CAN GIVE?

Donor and recipient safety is a constant concern for Héma-Québec. Only qualifying individuals 18 and over are permitted to give blood.

All donation candidates must present an identification card and fill out a questionnaire on their health and certain aspects of their personal life. Staff members then check their blood pressure, temperature and hemoglobin level (hemoglobin is a protein containing iron that is found in red blood cells). If everything is as it should be, the donation can take place.

Before giving blood, donors are urged to make sure that they have eaten and are well hydrated. They are also greeted with a bottle of water and a light snack when they check in.



For information on whole blood donation eligibility, please call: **1-800-847-2525**.

DID YOU KNOW?

In Québec, those who give blood do so voluntarily. Hospitals' blood supply therefore depends on the generosity of those who want to share the gift of health.

BREAKDOWN OF BLOOD TYPES IN QUÉBEC

	Rh+	Rh-
O 46%	39%	7%
A 42%	36%	6%
B 9%	7.5%	1.5%
AB 3%	2.5%	0.5%

Every blood type is important. Your donation can make a difference!

WHERE TO DONATE?

More than 2,000 mobile blood drives are organized per year. Whole blood donations can also be made at our donor centres.

To find out more, go to www.hema-quebec.qc.ca or call Donor Services at **1-800-847-2525**.

OTHER WAYS TO HELP

Volunteer with Héma-Québec and you too can save lives by helping to recruit donors and organize blood drives.

To find out more: www.hema-quebec.qc.ca, *Volunteers* section.

LEARN MORE

WATCH OUR VIDEOS:



FOLLOW US ON:     

BLOOD TYPES

To the naked eye, nothing distinguishes one person's blood from that of another. In fact, however, each person has a specific blood type.

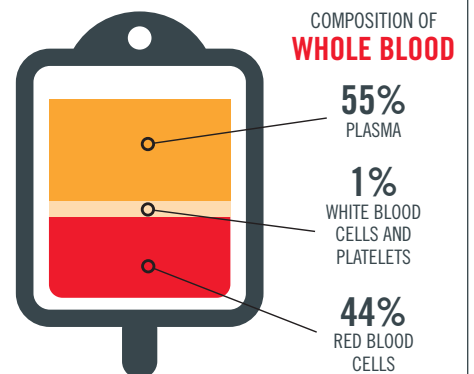
Recipient	Donor							
	O-	O+	B-	B+	A-	A+	AB-	AB+
AB+	✓	✓	✓	✓	✓	✓	✓	✓
AB-	✓	✓	✓	✓	✓	✓	✓	✓
A+	✓	✓	✓	✓	✓	✓	✓	✓
A-	✓	✓	✓	✓	✓	✓	✓	✓
B+	✓	✓	✓	✓	✓	✓	✓	✓
B-	✓	✓	✓	✓	✓	✓	✓	✓
O+	✓	✓	✓	✓	✓	✓	✓	✓
O-	✓	✓	✓	✓	✓	✓	✓	✓

The four main groups are: A, O, B and AB, and they are divided into Rhesus (Rh) positive and negative (A+, A-, O+, O-, B+, B-, AB+, AB-).

In everyday life, it doesn't matter what blood type you are. But when it comes to transfusions, the donor and recipient blood types must be compatible, otherwise the recipient could have a reaction.

This is why hospitals test all recipients' blood before each transfusion. If the patient is losing too much blood and there is no time to test his or her blood type, blood that is compatible with every type, O negative, is transfused.

The adult body contains about five litres of blood. This volume varies with a person's sex, weight and height.



The steps between donation and transfusion

DONATION

Collecting one blood bag (450 ml) takes about ten minutes, but the entire donation process usually takes an hour.

All the equipment used comprises single-use, sterile material. There is therefore no danger of contracting a disease when giving blood.

In addition to the blood bag, samples are collected for analysis.

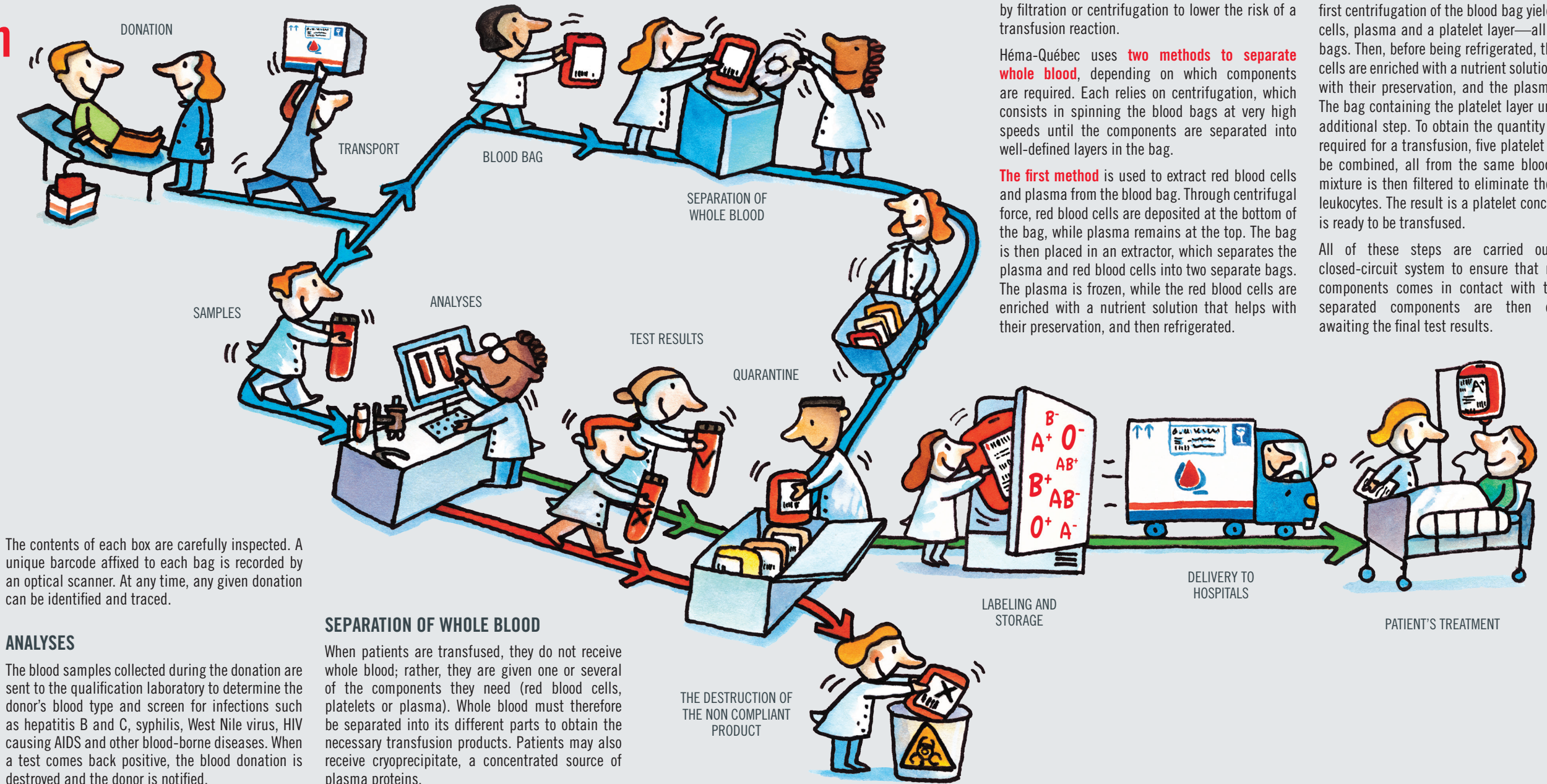
The amount of blood collected is minimal compared to the total blood volume, equivalent to approximately 1/12th of an average-sized person's blood volume. The body quickly replenishes the blood collected: plasma is regenerated in less than 24 hours and the other blood components in less than eight weeks. You can therefore give blood every 56 days if you are a man, and every 84 days if you are a woman.

TRANSPORT

After the collection, the blood bags and their samples are packed in temperature-controlled boxes and sent to one of Héma-Québec's laboratories, located in Montréal and Québec City.

ARRIVAL AT HÉMA-QUÉBEC

When the blood bags arrive at Héma-Québec, a race against the clock begins. Blood is perishable; it is therefore crucial to proceed efficiently, and in accordance with a stringent set of standards and procedures.



The contents of each box are carefully inspected. A unique barcode affixed to each bag is recorded by an optical scanner. At any time, any given donation can be identified and traced.

ANALYSES

The blood samples collected during the donation are sent to the qualification laboratory to determine the donor's blood type and screen for infections such as hepatitis B and C, syphilis, West Nile virus, HIV causing AIDS and other blood-borne diseases. When a test comes back positive, the blood donation is destroyed and the donor is notified.

SEPARATION OF WHOLE BLOOD

When patients are transfused, they do not receive whole blood; rather, they are given one or several of the components they need (red blood cells, platelets or plasma). Whole blood must therefore be separated into its different parts to obtain the necessary transfusion products. Patients may also receive cryoprecipitate, a concentrated source of plasma proteins.

Before extracting the desired components, white blood cells (also called leukocytes) are removed by filtration or centrifugation to lower the risk of a transfusion reaction.

Héma-Québec uses **two methods to separate whole blood**, depending on which components are required. Each relies on centrifugation, which consists in spinning the blood bags at very high speeds until the components are separated into well-defined layers in the bag.

The first method is used to extract red blood cells and plasma from the blood bag. Through centrifugal force, red blood cells are deposited at the bottom of the bag, while plasma remains at the top. The bag is then placed in an extractor, which separates the plasma and red blood cells into two separate bags. The plasma is frozen, while the red blood cells are enriched with a nutrient solution that helps with their preservation, and then refrigerated.

The second method further automates the separation steps. It is used to prepare platelets. A first centrifugation of the blood bag yields red blood cells, plasma and a platelet layer—all in separate bags. Then, before being refrigerated, the red blood cells are enriched with a nutrient solution that helps with their preservation, and the plasma is frozen. The bag containing the platelet layer undergoes an additional step. To obtain the quantity of platelets required for a transfusion, five platelet layers must be combined, all from the same blood type. This mixture is then filtered to eliminate the remaining leukocytes. The result is a platelet concentrate that is ready to be transfused.

All of these steps are carried out using a closed-circuit system to ensure that none of the components comes in contact with the air. The separated components are then quarantined awaiting the final test results.



WHAT ARE THE DIFFERENT PRODUCTS USED FOR?

Each year, Héma-Québec delivers more than 300,000 blood products to Québec hospitals. The blood components used vary depending on the patient.

RED BLOOD CELLS are used for accident victims, people undergoing surgery and those suffering from anemia.

PLATELETS are often prescribed after chemotherapy (treatment used against certain cancers, such as leukemia).

PLASMA is effective in treating serious burn victims or stopping hemorrhages.

CRYOPRECIPITATE is used to treat certain liver diseases and severe cases of abnormal bleeding.

SHELF LIFE

Compliant products are labeled and stored, ready for shipment to hospitals. The **short shelf life** of blood products is a constant challenge for Héma-Québec.

RED BLOOD CELLS



PLATELETS



PLASMA AND CRYOPRECIPITATE

