



## Compatibility of Blood Types

1. Human blood types are characterized by the presence of antigens and antibodies.

Antigen	Antibodies
Definition: <u>A specific protein found on the surface of a Red Blood Cell.</u>	Definition: <u>Specific antibodies that act against foreign antigen</u>
Location: <u>Antigens are found on the surface of red blood cells.</u>	Location: <u>Antibodies are found in plasma, and made by White Blood cells</u>
The three types of agglutinogens: <u>Agglutinogens A, B and Rh</u>	The three types of agglutinins: <u>Anti-A, anti-B and anti-Rh agglutinins</u>

2. Summary table of antigens and antibodies according to blood type\*

Blood type	<u>Antigens</u> present on the surface of red blood cells	<u>Antibodies</u> present in plasma
A-	A	<i>anti-B and anti-Rh</i>
A+	A and Rh	<i>anti-B</i>
B-	B	<i>anti-A and anti-Rh</i>
B+	B and Rh	<i>anti-A</i>
AB-	A and B	<i>anti-Rh</i>
AB+	A, B and Rh	<i>none</i>
O-	None	<i>anti-A, anti-B and anti-Rh</i>
O+	Rh	<i>anti-A and anti-B</i>

\* It is assumed that the Rh- groups have already been exposed to the blood of a person with the Rh+ blood type.

3. In Québec, the most common blood type is O and the most rare blood type is AB.

### Transfusions and compatibility of blood types

4. Define "blood transfusion." The transfer of a blood product, usually red blood cells to a patient (the recipient) from another person (the donor)

5. Define "blood compatibility." There is blood compatibility when it is possible to transfuse a blood product from a donor with a specific blood type to a recipient of the same blood type or of a different blood type without causing agglutination (blood clumping).

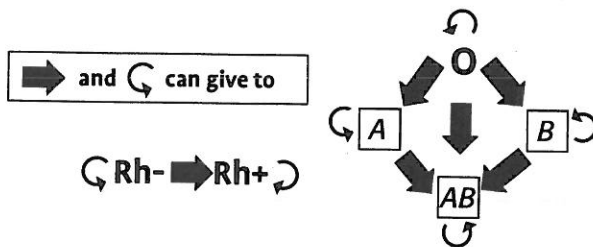
6. The rule that must be applied to blood transfusions: We can only receive/recognize the antigens we already have, all others are not recognized and considered foreign invaders.

7. Summary table of the compatibility of blood types\*

Blood type	Can give to	Can receive from
A-	A+, A-, AB+, AB-	A-, O-
A+	A+, AB+	A+, A-, O+, O-
B-	B-, B+, AB-, AB+	B-, O-
B+	B+, AB+	B+, B-, O+, O-
AB-	AB-, AB+	AB-, A-, B-, O-
AB+	AB+	All blood types
O-	All blood types	O-
O+	O+, A+, B+, AB+	O+, O-

\* It is assumed that the Rh- groups have already been exposed to the blood of a person with the Rh+ blood type.

8. Complete the following blood type compatibility diagram:



9. a) Type considered as a universal donor: O-

b) Why can people with this blood type give blood to anyone?

Their red blood cells do not contain any antigens and are recognized by everyone.

10. a) Type considered a universal recipient: AB+

b) Why can people with this blood type receive blood of all types?

Their plasma does not contain any antibodies against A, B or Rh antigens.