



ABO Blood Groups

What is a blood group?

All people belong to one of four inherited blood groups: A, B, AB and O. The letters A and B refer to the kind of antigen found on an individual's red blood cells. An antigen is a protein on the cell which triggers an immune response, such as the formation of antibodies, against the antigens which the red cell lacks. For example, A antigens, when exposed to B antigens, will produce anti-B antibodies.

How is my blood group determined?

You inherit your blood group from your biological parents. This chart shows the potential blood groups you may inherit from your parents.

BLOOD TYPE INHERITANCE		PARENTS' BLOOD GROUP									
		A B	A B	A B	A B	B	A	A	O	O	O
POSSIBLE CHILDREN	O					•	•	•	•	•	•
	A	•	•	•	•		•	•		•	
	B	•	•	•	•	•	•		•		
	A B	•	•	•			•				

What are the four basic groups in the ABO system and what do the group names mean?

Group A Blood has A antigen on red cells, and anti-B antibody in its plasma.

Group B Blood has B antigen on red cells, and anti-A antibody in its plasma.

Group AB Blood has both A and B antigens on red cells but neither anti-A antibody nor anti-B antibody in its plasma. AB blood cannot cause the clumping of red cells of any other groups, and therefore persons with AB blood are called universal recipients.

Group O Blood has neither A nor B antigens on red cells, and both anti-A antibody and anti-B antibody in the plasma. Group O blood cannot be clumped by any human blood, and therefore persons with Group O negative are called universal donors.

What is done to match donated blood with patients who need blood?

Before a transfusion is given, it is important to know which blood group a person has because the blood plasma contains strong antibodies, called anti-A and anti-B, that react against the red cells with A or B antigens.

If anti-A antibody came in contact with A antigen (or if anti-B antibody met B antigen), the result could be a dangerous, possibly fatal, transfusion reaction. To prevent such reactions, Medical Technologists will “crossmatch” your blood with donated blood. A sample of your blood and samples from donated blood are tested to make certain they are compatible.

What is the Rh factor?

Most people also have an inherited condition of the red blood cells known as the Rh factor, or antigen D. When the D antigen is present, a person’s blood type is designated Rh positive. When antigen D is missing, the blood type is classified Rh negative. In general, Rh negative blood is given to Rh negative patients and Rh positive blood to Rh positive patients.

How can I tell what blood type I can receive?

This chart shows what blood types you can receive if you need blood.

		YOU CAN RECEIVE							
		O -	O+	B -	B+	A -	A+	AB -	AB +
IF YOU HAVE	AB+	●	●	●	●	●	●	●	●
	AB-	●		●		●		●	
	A+	●	●			●	●		
	A-	●				●			
	B+	●	●	●	●				
	B-	●		●					
	O+	●	●						
	O-	●							

How common are the blood groups in the United States?

The following list (from AABB Facts About Blood, 7/1/98) shows the percentage of people in the United States with a particular blood type. These percentages may vary in certain sections of the country depending upon the cultural make-up of the population.

- O Positive 38%
- A Positive 34%
- B Positive 9%
- O Negative 7%
- A Negative 6%
- AB Positive 3%
- B Negative 2%
- AB Negative 1%

Are blood types that make up less than 10% of the population considered rare blood types?

No. A “rare” blood type is where only one person in 1,000 lacks the same antigen. If only one in 10,000 people lack an antigen, the type is considered “very rare.”

There are more than 600 antigens known today, and more are discovered each year. The most familiar antigens are those of the ABO Blood Group already mentioned. Other antigens are less familiar, because they are found in very few people’s blood. Sometimes the reverse is true: there are some antigens that most of us carry on our red cells but which a few people’s red cells lack--their blood is said to be “negative” for those antigens.