

I NEED TO KNOW ABOUT D

Transfusion Fact Sheet Volume 2, Number 9
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Is ABO the only blood group system?

Most people have heard of the ABO blood group system (see our fact sheet *I Need to Know About ABO*, Vol 1, No 1). There are also other blood group systems such as Rh, Kell and Duffy.

What is D?

The Rh blood group system has around 45 different red blood cell antigens. Antigens are proteins or carbohydrates, which our immune system can recognise. D is the most important antigen of the Rh system. It is also known as Rh (D) or Rh factor or RH1 (ISBT nomenclature).

Where is D antigen found?

All different Rh antigens, including D, are found in red blood cell membranes.

Does everyone have D?

No, not everyone. In Australia, approximately 83% of people will have Rh (D) on their red cells. Their blood type is called Rh positive. The other 17% that do not have the D on their red cells are called Rh negative. The percentage of Rh negative people varies in different countries, (eg. less than 5% of India's population are Rh negative.)

Does it matter if someone is Rh(D) negative?

The D antigen is very immunogenic. That means it is easy to make an immune response or antibody against it. If a person who is Rh negative is exposed to Rh positive red cells, that person may make an antibody.

Is the Rh (D) antibody dangerous?

An Rh (D) negative person, with an Rh (D) antibody, will destroy any Rh (D) positive red cells during a transfusion. This could lead to transfusion reactions. Therefore only Rh negative blood should be given to Rh negative people except in extreme circumstances. An Rh (D) negative woman with an Rh (D) antibody may have problems during pregnancy if the baby is Rh (D) positive (see our fact sheet *What is Rh (D) Immunoglobulin Used For?* Vol 2, No 6).

Can we prevent Rh(D) negative patients developing an Rh(D) antibody?

Yes. Never give Rh (D) positive red cells to these patients. Sometimes a patient's blood group is not known or has not yet

Population data for the Rh D factor

Population	Rh(D) Neg	Rh(D) Pos
Australians	17%	83%
Indigenous Australians	<1%	>99%
Europeans	16%	84%
African American	approx 7%	93%
Native Americans	approx 1%	99%
African descent	<1%	>99%
Asian	<1%	>99%

been tested (eg. in an emergency). At such times group O Rh (D) negative red cells are used. This will be given until the patient's blood group can be determined. Group O Rh (D) negative is the universal red cell donor.

How can we work out someone's Rh (D) type?

There are several tests available which take the patient's red cells and mix them with antibodies which attach to Rh (D). If there is a strong reaction, the patient is Rh (D) positive. No reaction means negative. Rarely there is a weak reaction. This is called 'weak D'.

What is weak D?

The D protein is made up of several building blocks. If one or more of these building blocks are missing or changed, the antibody reaction is not very strong. In true Rh (D) negative people, there is no D protein at all.

BLOOD FACT

Rh used to be called 'Rhesus' and was named after a species of monkey.