

About Rh blood groups (types)

The Rh factor is the name given to a blood group protein, Rh (D), which is attached to red blood cells. Only a portion of the population has this protein on their red blood cells.

On average, of every 100 people:

- 83 will have the Rh factor; their blood type is called "Rh (D) positive"
- 17 will not have the Rh factor; their blood type is called "Rh (D) negative"

The Rh factor will not affect a pregnancy if:

- The mother is Rh (D) positive and her baby is Rh (D) negative
- The mother is Rh (D) positive and her baby is also Rh (D) positive
- The mother is Rh (D) negative and her baby is also Rh (D) negative



Meet Alison and her daughter Rose. Alison received vital treatment during her pregnancy thanks to Australia's generous blood donors.

For further information call the Anti-D Coordinator in your state or territory, on 13 14 95 or visit donateblood.com.au/all-about-blood/different-donation-types/anti-d

Sept 2010 - 14365031

Anti-D donors

Helping to save the lives of babies



Meet Rose. Rose was born healthy thanks to the Anti-D injections her mum received when pregnant.

Haemolytic Disease of the Newborn, or HDN, could potentially affect the babies of up to 17% of mothers, causing serious complications and, in some cases, death.

It can be prevented.

What is HDN?

A baby's blood type is jointly inherited from its parents. For this reason, a mother and her baby may have different blood types. Usually, this is not a problem.

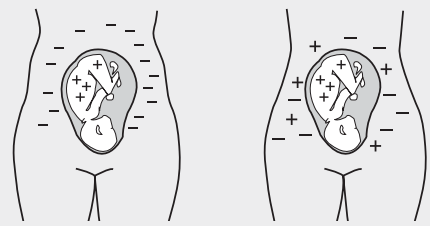
Problems can occur when a mother has Rh (D) negative blood and her baby is Rh (D) positive. During pregnancy and labour, a small amount of the baby's blood can cross into the mother's bloodstream.

When this happens, the mother's immune system can produce antibodies, called Anti-D, that could destroy her baby's Rh (D) positive red blood cells. This is known as HDN.

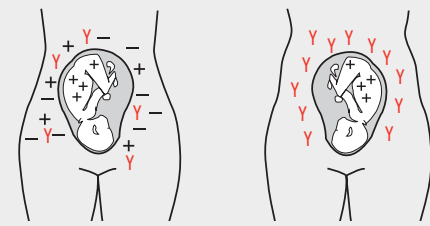
If these antibodies develop, they do not normally affect the first Rh (D) positive baby. However, the immune system has a good memory and can rapidly produce high levels of these antibodies in a future pregnancy.

This may lead to serious complications, such as severe anaemia, brain damage, and in some cases, the baby's death.

Sequence of events which can lead to Haemolytic Disease of the Newborn (HDN)



1. Rh (D) negative mother with Rh (D) positive baby.
2. Rh (D) positive red blood cells from the baby enter the mother's bloodstream either during the birth of the baby or during the pregnancy.



3. Antibodies (Y) are produced by the mother's immune system to destroy the Rh (D) positive red blood cells in the mother's blood. The Rh (D) antibodies remain for many years.
4. In the next pregnancy with an Rh (D) positive baby, the mother's antibodies may cross the placenta and destroy the baby's red blood cells.



5. If the baby's red blood cells are destroyed, it can lead to Haemolytic Disease of the Newborn (HDN) in the baby.

Legend. See next diagram.

Anti-D, produced from the blood of selected Rh (D) negative donors, is used to prevent HDN. As someone with this blood type, you are one of the few people who can help.

What is Anti-D and how is it made?

Anti-D is a name commonly used for Rh (D) immunoglobulin, a special antibody injection used to prevent HDN.

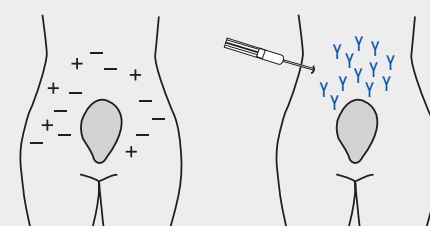
Anti-D can only be made from the blood of a select group of donors who have Rh (D) negative blood as well as the Anti-D antibody.

How does it work?

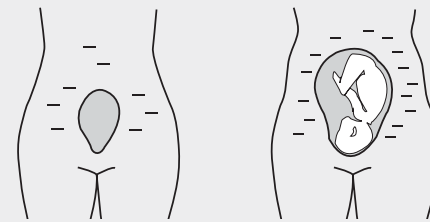
The most likely time that the baby's blood will cross the placenta into the mother's bloodstream is during labour and delivery. However, there are also times during the pregnancy when there is an increased chance of this occurring.

To reduce the chance of the mother forming antibodies to their baby's red blood cells and therefore HDN, it is recommended that all Rh (D) negative women receive Anti-D injections when they are pregnant. These injections are given at 28 and 34 weeks, and again very soon after the birth of an Rh (D) positive baby. It is also recommended that Rh (D) negative women receive Anti-D injections following events such as miscarriage, termination of pregnancy, amniocentesis or significant abdominal trauma.

Sequence of events following injection of Rh (D) immunoglobulin



1. Rh (D) positive red blood cells from the baby enter the mother's bloodstream (usually at birth).
2. Rh (D) immunoglobulin (Y) is injected within 72 hours of the baby's birth to remove Rh (D) positive red blood cells from the mother's bloodstream. The mother's immune system does not produce antibodies to the Rh (D) positive red blood.



3. The Rh (D) immunoglobulin injection is given before the mother's immune system has the chance to make its own antibodies against the baby's Rh (D) positive blood. Therefore in the next pregnancy with an Rh (D) positive baby, the mother does not have pre-formed antibodies which can destroy the baby's red blood cells.

Legend

- represents the mother's Rh (D) negative red blood cells
- + represents the baby's Rh (D) positive red blood cells
- Y represents antibodies produced by the mother's immune system against Rh (D) positive red blood cells
- Y represents Rh (D) immunoglobulin given by injection to remove Rh (D) positive red blood cells

To be effective, the Anti-D injection must be given before the mother's immune system has the chance to make its own antibodies against the baby's Rh (D) positive blood.

This Anti-D injection contains antibodies to destroy any Rh (D) positive red blood cells that may have passed from the baby into the mother's bloodstream during the pregnancy or the baby's delivery.

Research shows that a small injection of Anti-D given to the mother does not harm the baby and will reduce the chance of HDN.

On average, approximately 17% of mothers in Australia will need Anti-D injections during each of their pregnancies and after the birth of an Rh (D) positive baby. Currently, over 11,000 injections are given each month across Australia.

You are one of the few people who can help

Anti-D can only be produced from the blood of a select group of donors. These donors all have the Rh (D) negative blood type but they also have an antibody called Anti-D. Very few people, and even fewer donors, have Anti-D, so we rely heavily on these donors for this important product.

To maximise the supply of Anti-D to meet demand, we have established a special program called the Anti-D program. In this program, we boost the Anti-D levels of donors who already have Anti-D. In addition, we can stimulate development of Anti-D in specially selected donors who initially do not have it. This means that if you are a male or a female past child-bearing years, you may be eligible to join our Anti-D program.

Currently the number of Anti-D blood donors in Australia is only just sufficient. It is necessary to constantly maintain the number of donors and to ensure we can cater for increases in demand. Therefore, we are constantly in need of more donors to ensure that we can continue to meet the future needs of Rh (D) negative mothers and their babies.

What to expect if you decide to join the program

After discussions to answer all your questions, further medical assessments and testing will occur to confirm eligibility. Once this is complete, you will be given a series of small intravenous injections of specially selected and processed Rh (D) positive red cells. In about 50% of cases, this will result in Anti-D being produced.

Once you have produced Anti-D, the levels are boosted by further occasional injections of small quantities of Rh (D) positive red cells. You will then be able to give plasma donations – as often as every two to three weeks.

If you already have Anti-D and are eligible for the program, we arrange the same periodic red cell injections to boost your Anti-D levels. This ensures that your donations contain the desired amount of this precious antibody.

How often can you donate?

Anti-D donors are able to give plasma donations as often as fortnightly, depending on their preference and other commitments.