

# Important Information for Rh (D) Negative Women

**Prevention of Haemolytic  
Disease of the Newborn**

A fetal blood type is jointly inherited from both parents. For this reason, a fetus may have a different blood type to its mother. This is normal and usually not a problem. However, in some cases, these differences can be very important.<sup>1</sup>

This booklet describes one important blood type difference that may occur between a woman and her fetus which may harm future pregnancies. It explains how Rh (D) immunoglobulin, a special antibody injection, can avoid this potential harm in pregnancy. Rh (D) immunoglobulin injection is also commonly referred to as anti-D.<sup>2</sup>

## What is the Rh factor?

The Rh factor is the name given to a blood group protein, Rh (D), which is attached to red blood cells. Some people have this protein on their red blood cells and others do not.<sup>2</sup>

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'<sup>3</sup>

The percentage of Rh (D) negative women may vary across ethnic groups. A fetal blood type is jointly inherited from both parents. For this reason, a fetus may have a different blood type to its parents. Usually, this is not a problem. When, however, the maternal blood type is Rh (D) negative and the fetus is Rh (D) positive, serious complications can occur with future pregnancies. Rh (D) immunoglobulin, a special antibody injection, can avoid this potential harm.<sup>1,2</sup>

## How can the Rh factor affect future pregnancies?

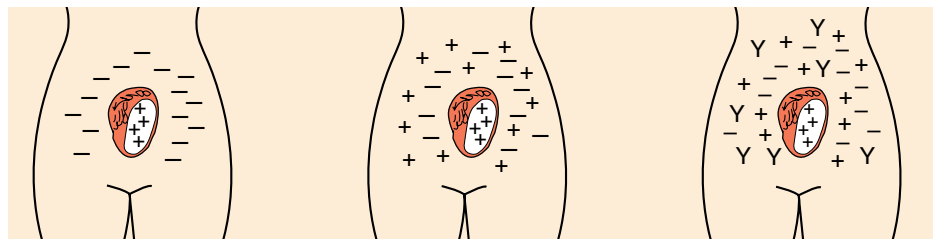
During pregnancy, a small amount of fetal red blood cells can cross the placenta into the maternal bloodstream. If the maternal blood type is Rh (D) negative, and the fetal blood type is Rh (D) positive, the maternal immune system can react by producing antibodies to the fetal red blood cells.<sup>2</sup>

## Haemolytic Disease of the Newborn (HDN)

Diagram showing sequence of events which can lead to Haemolytic Disease of the Newborn (HDN)<sup>2</sup>

### Legend

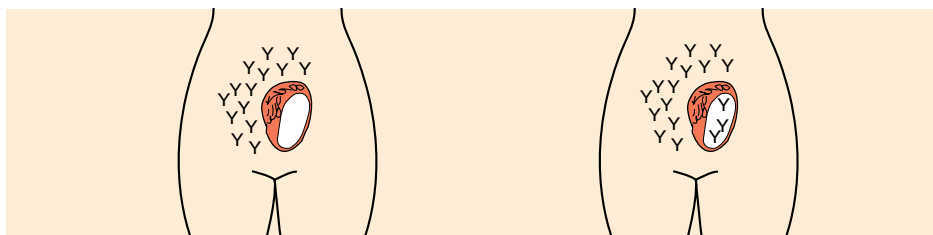
- represents the woman's Rh (D) negative red blood cells
- + represents the fetal Rh (D) positive red blood cells
- Y represents antibodies produced by the woman's immune system against Rh (D) positive red blood cells



Rh (D) negative woman with Rh (D) positive fetus.

Rh (D) positive red blood cells from the fetus enter the woman's bloodstream either during or at the end of the pregnancy, e.g. amniocentesis or major blow to the abdomen.

Antibodies (Y) are produced by the woman's immune system to destroy the Rh (D) positive red blood cells in the maternal blood. The Rh (D) antibodies remain for many years.



In the next pregnancy with an Rh (D) positive fetus, the woman's antibodies may cross the placenta and destroy the fetal red blood cells.

If the fetal red blood cells are destroyed, it can lead to Haemolytic Disease of the Newborn (HDN).

Antibodies are an important component of the body's natural defence system. In this situation, antibodies may cross the placenta to the fetus and destroy the fetal red blood cells. If these antibodies develop, they will not normally affect the first pregnancy. The immune system, however, has a good memory, and can rapidly produce high levels of these antibodies if there is contact with Rh (D) positive blood in a future pregnancy.<sup>2</sup>

This may lead to serious complications such as severe anaemia, brain damage and even death of the fetus in some cases. This condition is known as Haemolytic Disease of the Newborn (HDN). Due to the potential serious effects of HDN, prevention of the problem is the key.<sup>1,2</sup>

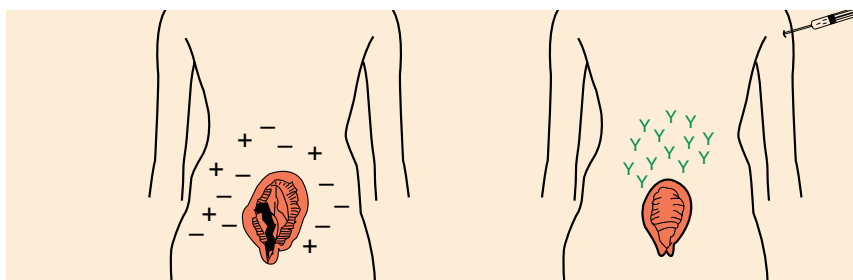
### The Rh factor will not affect a pregnancy if:

- The maternal blood type is Rh (D) positive and the fetus is Rh (D) negative
- The maternal blood type is Rh (D) positive and the fetus is also Rh (D) positive
- The maternal blood type is Rh (D) negative and the fetus is also Rh (D) negative

## Prevention of Haemolytic Disease of the Newborn (HDN) using Rh (D) immunoglobulin

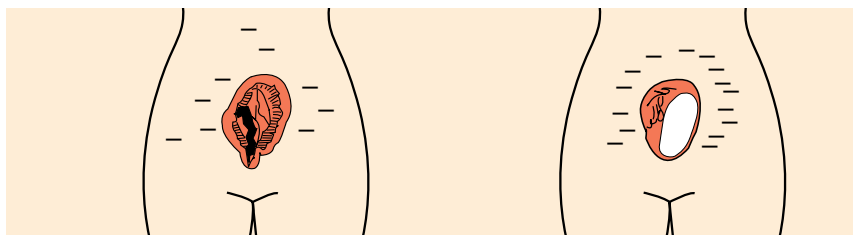
Diagrams showing the sequence of events following injection of Rh (D) immunoglobulin.<sup>4</sup>

**Legend**  
 - represents the woman's Rh (D) negative red blood cells  
 + represents the fetal Rh (D) positive red blood cells  
 Y represents Rh (D) immunoglobulin given by injection to remove Rh (D) positive red blood cells



Rh (D) positive red blood cells from the fetus enter the woman's bloodstream (usually at the end of pregnancy).

Rh (D) immunoglobulin (Y) is injected within 72 hours of the end of the pregnancy to remove fetal Rh (D) positive red blood cells from the maternal bloodstream. The woman's immune system usually does not produce antibodies to the Rh (D) positive red blood cells.



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

## Prevention of Haemolytic Disease of the Newborn (HDN) during pregnancy <sup>5</sup>

During pregnancy, there are times when there is an increased risk of the fetal blood crossing the placenta into the maternal bloodstream. Some examples include when tests such as amniocentesis are performed, if a miscarriage occurs, if the woman is involved in an accident with a major blow to her abdomen or at the termination of pregnancy.

To reduce the chance of the woman forming antibodies to the fetal red blood cells, at such times it is necessary to give all Rh (D) negative women an injection of Rh (D) immunoglobulin. Your doctor will know when to recommend an injection of Rh (D) immunoglobulin.

This Rh (D) immunoglobulin injection contains antibodies to destroy the Rh (D) positive red blood cells that may have passed from the fetus into the woman's bloodstream. The Rh (D) immunoglobulin injection is given before the woman's immune system has the chance to make its own antibodies against the fetal Rh (D) positive blood, which could then cause harm to a future pregnancy.

## Where does the Rh (D) immunoglobulin come from?

Injections of Rh (D) immunoglobulin are made from the plasma (liquid part of blood) of carefully selected voluntary Australian blood donors.<sup>4</sup>

The Australian Red Cross Blood Service has a special blood donor program aimed at maintaining a sufficient Australian supply of Rh (D) immunoglobulin which is manufactured in Australia by CSL Behring.<sup>2</sup>

This supply has enabled healthcare professionals to reduce the risk of Haemolytic Disease of the Newborn (HDN) in Rh (D) negative women by routinely giving Rh (D) immunoglobulin injections for all pregnancies at 28 and 34 weeks gestation, as well as after any event where there is an increased risk of fetal blood crossing the placenta, and after the delivery of Rh (D) positive babies.<sup>5</sup>

## Viral safety of Rh (D) immunoglobulin

To reduce the risk of transmission of infectious agents, steps taken include screening of plasma donors and donations, and virus removal procedures in the manufacturing process. The risk of viral and other infectious agents' infectivity, however, cannot be totally eliminated.<sup>4</sup>

If you have any questions about the risks and benefits of Rh (D) immunoglobulin, or your treatment generally, consult your doctor.

## Giving your consent

Everyone has the right to decide whether or not to have any treatment. Before giving consent, it is important to understand why you need the treatment and also its risks and benefits for you. If you have further questions after reading this leaflet, please ask your doctor.

**References:**

1. Rh(D) Immunoglobulin-VF Consumer Medicine Information October 2011
2. Transfuse Fact Sheet. What is Rh(D) immunoglobulin used for? Vol 2, Number 6. [www.transfusion.com.au](http://www.transfusion.com.au)
3. Frequently asked questions about the use of Rh(D) Immunoglobulin. Supply and Distribution Questions and Answers <http://www.transfusion.com.au/iTransfuse/resources#rhd>.
4. Rh(D) Immunoglobulin-VF Approved Product Information amended 9 November 2011
5. National Blood Authority Guidelines on the prophylactic use of Rh(D) immunoglobulin (anti-D) in obstetrics. June 2003

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