

Your Blood Group is RhD-negative

What does that mean for the care of you and your baby?



This leaflet explains the standard of care given to pregnant women who have been identified as having an RhD-negative blood group. It explains the following:

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The information in this leaflet is not designed to replace the professional guidance provided by your clinician, hospital midwife or community midwife. Your clinician or midwife should explain your treatment plan (including alternatives) and associated risks, including risk of injury.

Please ask your clinician or midwife to explain any part of your treatment that you remain unsure of. There is a glossary of terms at the back of this leaflet.

If you have a recommendation to receive Anti-D Immunoglobulin, you need to remember:

If you have an ACCIDENT (e.g. minor car accident or fall) or experience BLEEDING (vaginal bleeding) while you are pregnant then:

You must attend the Emergency Department up to 19+6 weeks gestation, or Labour Ward from 20 weeks gestation

Anti-D Immunoglobulin needs to be given within 72 hours

BLOOD GROUPS AND HDFN

Why is it important to know your blood group?

When you attend hospital for the first time during your pregnancy you will have several blood samples taken. One is used to determine your blood group and check for antibodies; which is very important for the prevention of *Haemolytic Disease of the Fetus and the Newborn* (HDFN). Your blood will be typed for the most clinically important ones: the ABO blood groups (O, A, B or AB) and the RhD blood group (RhD-positive or RhD-negative).

If you are RhD-negative you can potentially develop anti-D, an antibody your body can make against RhD-positive red blood cells (RBCs). Anti-D is the most clinically significant red blood cell antibody involved in HDFN.

Women who are RhD-positive will not develop anti-D.

Haemolytic Disease of the Fetus and Newborn

Haemolytic Disease of the Fetus and Newborn, is a condition that can affect the blood of a fetus or a new-born baby. You may hear it being called Rhesus Disease.

HDFN can happen where there is an incompatibility between the blood groups of a mother and her unborn baby. The mother can make substances called antibodies that attack the baby's RBCs.

This is important when an RhD-negative mother is carrying an RhD-positive baby. If any of the RhD-positive baby's RBCs get into the blood of an RhD-negative mother, her immune system may recognise the baby's RhD-positive RBCs as 'foreign' and produce anti-D.

The anti-D can cross from the mother's blood into the baby's blood (still in the womb), and destroy the baby's RBCs. This destruction causes anaemia, jaundice and in severe cases brain damage or even death. This can happen in the womb or after delivery.

Normally the first pregnancy is not affected. However, the antibodies remain in the mother's blood and they may damage the RBCs of subsequent babies (with the same blood group as the first).

PREVENTING HDFN – ANTI-D PROPHYLAXIS

Anti-D Prophylaxis

The development of anti-D in women who are RhD-negative can be prevented. This is done by injecting RhD-negative women with Anti-D Immunoglobulin (Rhopylac™). This Anti-D Immunoglobulin stops women developing anti-D, even though her baby's RhD-positive RBCs have entered her blood.

This has been done in many countries since the 1960s. At Wexford Maternity Unit, Anti-D Immunoglobulin is offered under three situations:

- **Antenatal Anti-D Prophylaxis:** Anti-D Immunoglobulin is given in response to a recognisable event (known as a Potential Sensitising Event; PSE) that could result in your baby's RBCs going into your blood (e.g. trauma, vaginal bleeding). Anti-D Immunoglobulin must be given each time you have a PSE. *Anti-D Immunoglobulin should be given within 72 hours of the PSE.*
- **Routine Antenatal Anti-D Prophylaxis:** A dose of Anti-D Immunoglobulin is given at 28-weeks gestation. This is called Routine, as it happens whether or not there is any recognisable PSE. It is designed to catch PSEs that you were not aware of.
- **Postnatal Anti-D Prophylaxis:** When your baby is born, and is confirmed RhD-positive you will be given more Anti-D Immunoglobulin. *Anti-D Immunoglobulin should be given within 72 hours of delivery.*

Anti-D Immunoglobulin and Associated Risks

Anti-D Immunoglobulin is made from human plasma, collected from carefully selected donors. The donors are screened for specific markers of infectious agents including HIV, HBV and HCV. However, as with all human-derived medicines, the possibility of transmitting infective agents cannot be totally excluded.

You may experience some soreness at the injection site. This is common and can last from a few hours to a day or two. Less commonly you may experience a mild fever, headache or rash. Very occasionally women can experience an allergic reaction to anti-D injections.

Anti-D Immunoglobulin will not harm your baby in any way. If you have any concerns, please speak to your midwife or obstetrician.

TARGETED ANTI-D PROPHYLAXIS: FETAL RHD SCREEN

Does every RhD-negative pregnant women need to get Anti-D?

The answer is no. Only pregnant RhD-negative women who are carrying an RhD-positive baby need to get Anti-D Immunoglobulin.

At the Wexford Maternity Unit approximately 40% of pregnant RhD-negative women carry an RhD-negative baby and therefore do not need Anti-D Immunoglobulin at any time during their pregnancy

Wexford Maternity Unit has introduced a system of targeted Anti-D Prophylaxis, where the RhD blood group of your baby will be determined at 20-weeks gestation. This allows Anti-D Immunoglobulin to be given only to those women who require it.

How will your unborn baby's RhD blood group type be determined?

When you are pregnant, a small amount of your baby's DNA can be found in your blood. This is known as cell-free fetal DNA (cffDNA). By testing this cffDNA from your blood, it is possible to determine the unborn baby's RhD blood group, in a very safe way. The test is called the Fetal *RHD* Screen (sometimes it is referred to as Fetal Genotyping or Noninvasive Prenatal Diagnosis for *RHD* (NIPD-*RHD*)).

You should have the Fetal *RHD* Screen, even if you carry more than one baby. If at least one of your babies is RhD-positive you will need anti-D.

Testing will be carried out by the Blood Group Genetics Laboratory, at the Irish Blood Transfusion Service.

If your RhD type is already known to be RhD-negative, from a previous pregnancy, then a blood sample will be taken at your Booking Visit.

If it is your first pregnancy, then your blood group will be determined first; if you are RhD-negative, then you be asked to return at 20 weeks gestation, for a second sample to be taken to perform the Fetal *RHD* Screen.

EFFECT OF FETAL RHD SCREEN RESULT ON YOUR CARE

Test Result: Baby is RhD-positive

If the test identifies your baby as being RhD-positive, then it is recommended that you receive Anti-D Immunoglobulin.

If an RhD-positive result is obtained for your baby, a report will be issued.

Due to the biology of *RHD*, approximately 2% of these babies will actually be RhD-negative. However, if there was no DNA testing performed all RhD-negative women would be offered Anti-D Immunoglobulin. The injection will not harm your baby.

Test Result: Baby is RhD-negative

If the test identifies your baby as being RhD-negative, then it is recommended that you do not receive Anti-D Immunoglobulin.

If an RhD-negative result is obtained for your baby, a report will be issued only when gestation is ≥ 11 -weeks.

If the Fetal *RHD* Screen suggests that your baby is RhD-negative, but the sample was taken at <11 weeks' gestation; then the result issued will be Inconclusive, with a request for a repeat sample to be taken after 11 weeks' gestation. Anti-D Immunoglobulin will be recommended until the RhD-negative result can be confirmed.

Test Result: Inconclusive

If the test gives an Inconclusive result, you will be offered Anti-D Immunoglobulin. There is no risk to your baby. Inconclusive results are generally due to technical reasons.

Test Accuracy

The Fetal *RHD* Screen is a very accurate test, capable of detecting very small amounts of your baby's DNA. However, there is a very small chance (0.1%) that your baby might be found to be RhD-positive at birth (even though the test said RhD-negative). You will be given Anti-D Immunoglobulin at birth.

There is a risk of producing anti-D if you do not get Anti-D Immunoglobulin, due to an incorrect RhD-negative test result. About 1% of RhD-negative women will develop anti-D, if they miss their Anti-D Immunoglobulin at 28-weeks' gestation (but do receive it at delivery). When you get Anti-D Immunoglobulin at both 28-weeks' gestation and at birth, then this falls to 0.35%.

WHAT OPTIONS DO YOU HAVE?

Receiving Anti-D Immunoglobulin (or not) is your choice

You can ask to receive Anti-D Immunoglobulin, even if the Fetal *RHD* Screen result predicts that your baby is RhD-negative.

Similarly you can ask not to receive Anti-D Immunoglobulin, even if the Fetal *RHD* Screen result predicts that your baby is RhD-positive.

Your midwife or clinician will help you understand the implications of the result from the Fetal *RHD* Screen and will discuss your treatment options.

What Happens if you Attend a Different Hospital in Ireland?

All hospitals in Ireland will give Anti-D Immunoglobulin for PSEs and at birth. However, not every hospital in Ireland has a RAADP program.

Also currently not all hospitals send samples for the Fetal *RHD* Screen test. They may not be familiar with the result and the implications of the result.

It is possible that if you attend a different hospital, they may want to give you Anti-D Immunoglobulin, even if your baby is RhD-negative. Please show them your Fetal *RHD* Screen result and this leaflet. You may wish to ask them to ring and talk to your midwife or clinician at Wexford Maternity Unit.

Further Information

If you have any questions about the information in the leaflet, or if you have any other concerns, please discuss these with your clinician or midwife.

GLOSSARY OF TERMS

Amniocentesis

An invasive procedure where a small sample of the (amniotic) fluid surrounding your baby is taken for laboratory tests.

Anaemia

when the levels of red cells in the blood are below normal.

Anti-D

an antibody which attacks red blood cells that are RhD-positive. Anti-D is the most significant and severe cause of HDFN.

Anti-D for Injection

See ***Anti-D Immunoglobulin***

Anti-D immunoglobulin

ready-made anti-D, which is given (by injection) to stop you making your own anti-D. In Ireland ***Anti-D Immunoglobulin*** is imported from countries where there have been no reported cases of variant Creutzfeldt-Jakob Disease (vCJD). These countries also have effective infectious disease screening programmes for blood products. In Ireland this is given at three different times during pregnancy (see ***Anti-D Prophylaxis, Routine Antenatal; Anti-D Prophylaxis, Antenatal; Anti-D Prophylaxis, Postnatal***).

Anti-D Prophylaxis, Antenatal

When you have a recognised PSE, you need to inform your clinician or midwife. You will be given an injection of ***Anti-D Immunoglobulin***. The result of the ***Fetal RHD Screen*** will allow only women who need ***Anti-D Immunoglobulin*** to get it.

Anti-D Prophylaxis, Postnatal

After the birth of your baby you will get ***Anti-D Immunoglobulin***, if your baby's blood group is RhD-positive.

Anti-D Prophylaxis, Routine Antenatal

Routine Antenatal Anti-D Prophylaxis (RAADP) is a program where all RhD-negative women are given Anti-D Immunoglobulin at 28-weeks gestation. Targeted Routine Antenatal Anti-D Prophylaxis (tRAADP) is when an RAADP program incorporates the result from the ***Fetal RHD Screen***, so ***Anti-D Immunoglobulin*** is only given to women that need it.

Antibodies

molecules made by your immune system to fight against infections or anything foreign which enters your blood.

Cell-free DNA

This is DNA that is present in plasma, and is known as cell-free DNA (cfDNA). It is part of normal cell renewal. Your baby's DNA can also be found in your plasma (cell free fetal DNA), and can be used to type your baby's blood group.

DNA

The biological molecule that contains your genetic code, which determines how your body is made up. DNA is normally packed inside cells.

Fetal RHD Screen

A test provided by the Irish Blood Transfusion Service (IBTS), which determines the RhD blood group of your baby by testing ***cell-free DNA*** in your blood sample. It means that only women who need ***Anti-D Immunoglobulin*** will be offered it.

GLOSSARY OF TERMS

HDFN	Haemolytic Disease of the Fetus and New-born: This is as a result of antibodies in the mother affecting the baby's red cells. This can cause anaemia, jaundice and in severe cases brain damage or death, either while the baby is in the womb or after delivery. Anti-D is the most common cause.
Jaundice	Caused by raised levels of bilirubin (waste products from the breakdown of red blood cells). It gives a yellow colour to skin and eyes.
Plasma	The liquid part of blood. Prophylactic anti-D is made from the plasma of specially selected blood donors.
Potential Sensitising Event (PSE)	Any event which allows your baby's red cells to enter your blood. There is then a risk that you can make Anti-D .
Prophylactic anti-D	See Anti-D Immunoglobulin
Prophylaxis	Medicine given to prevent a harmful condition developing.
RAAADP or tRAADP	Routine Antenatal Anti-D Prophylaxis or targeted Routine Antenatal Anti-D Prophylaxis ; See Anti-D Prophylaxis, Routine Antenatal .
Red Blood Cell	Red Blood cells are what makes your blood red and are packed with haemoglobin. They specialise in carrying oxygen around your body. They also have a lot of molecules on their surface; many of these are Blood Groups.
Red Blood Cell Antibodies	Red Blood cell antibodies are your body's natural defence against red blood cells which are different from your own (from your baby or transfusion). Antibodies can destroy red blood cells.
RhD Blood group	The most important blood groups are your ABO and RhD types (e.g. O RhD-positive or O RhD-negative). In Ireland about 15% of people are RhD-negative. This differs in people of different ethnic backgrounds (e.g. in Asia <1% are RhD-negative).
Rhesus disease	See Haemolytic Disease of the Fetus and New-born
Rhesus Factor	another name for the RhD blood group.
Rhesus positive or Rhesus negative	other names for RhD-positive or RhD-negative blood groups.
Routine Antenatal Anti-D Prophylaxis	injections of ready-made anti-D offered to women who are D negative to stop them making anti-D. This is given during late pregnancy and after incidents (PSEs), which may cause your baby's red cells to leak into your blood.
Variant Creutzfeldt-Jakob Disease (vCJD).	Ireland no longer manufactures Anti-D Immunoglobulin . Since the emergence of vCJD in the UK and Ireland the medical advice has been to use plasma products sourced from countries where vCJD has not been reported. In Ireland commercial anti-D known as Rhophylac™ is used and is made from volunteer plasma donors.

DATA PROTECTION AND SAMPLE RETENTION

Both Wexford General Hospital and the Irish Blood Transfusion Service keep records of all test results.

Wexford General Hospital retains these for a period of 25 years.

The Irish Blood Transfusion Service retains these for a period of 30 years (as required by EU Directive 2002/98/EC).

Both Wexford General Hospital and the Irish Blood Transfusion Service are subject to, and comply with, the Data Protection Act 2018 and the General Data Protection Regulation (GDPR).

The Irish Blood Transfusion Service will retain plasma from each sample, for the duration of the pregnancy and a period of up to 8 weeks after delivery. This is to allow investigation of any discrepant results identified at birth. If not required all plasma will be discarded after this time.

For More Information on your care at Wexford General Hospital;

Phone: +353-35-9153000

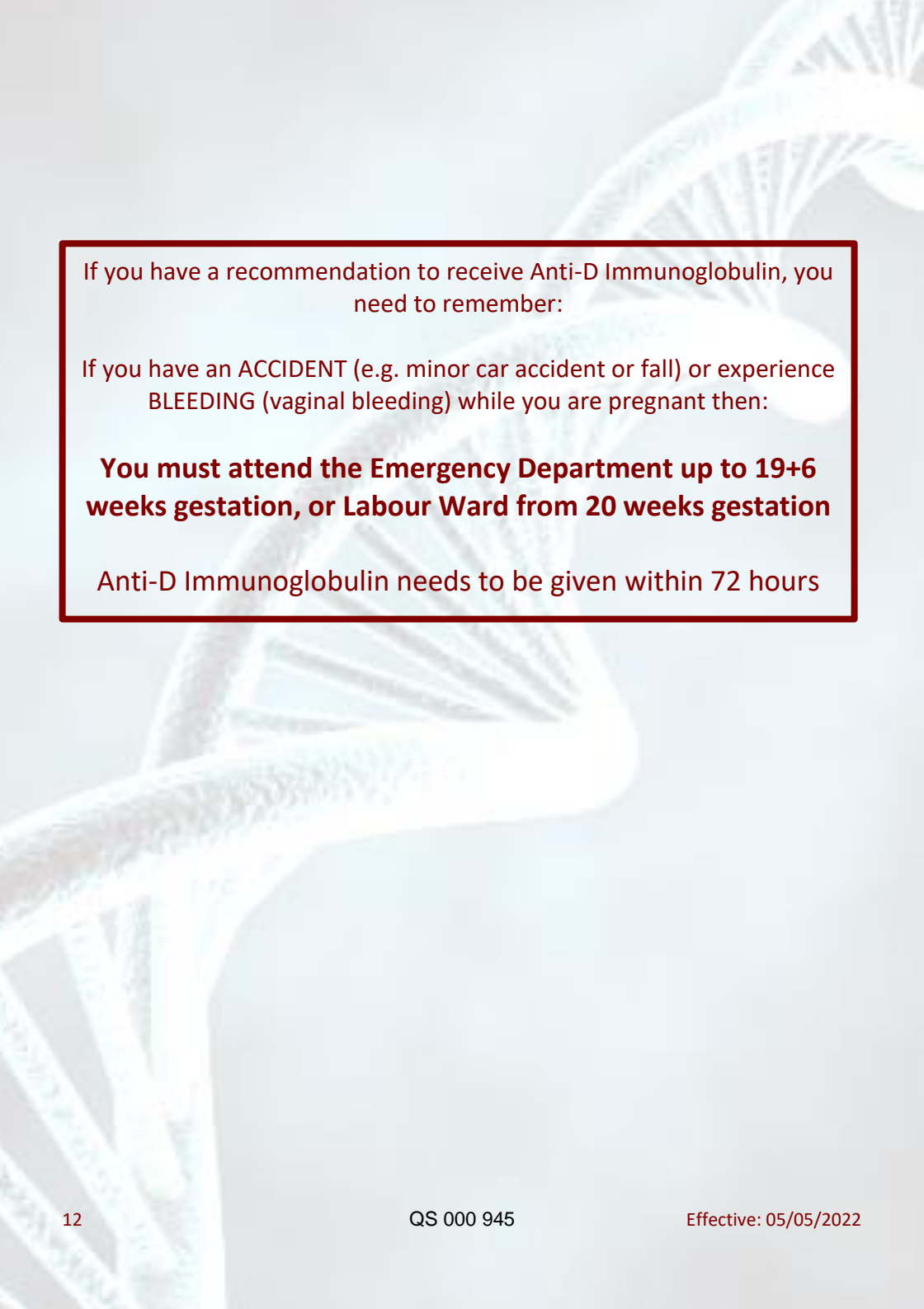
Web: www.hse.ie/eng/services/list/3/acutehospitals/hospitals/wexford

For More Information on technical aspects of the Fetal *RHD* Screen:

Visit: www.giveblood.ie/Clinical-Services/Blood-Group-Genetics/Our-Tests/Fetal-RHD-Screen-cffDNA/

YOUR NOTES

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If you have a recommendation to receive Anti-D Immunoglobulin, you need to remember:

If you have an ACCIDENT (e.g. minor car accident or fall) or experience BLEEDING (vaginal bleeding) while you are pregnant then:

You must attend the Emergency Department up to 19+6 weeks gestation, or Labour Ward from 20 weeks gestation

Anti-D Immunoglobulin needs to be given within 72 hours