

Mother's blood test to check her unborn baby's blood group



This leaflet explains why it is important to have a blood test to check the baby's blood group, so that only those who need it, receive anti-D injections. It also describes what is Haemolytic Disease of the Fetus and Newborn, previously called *Rhesus* disease.

Please also read other leaflets from your Hospital Trust and NHS Blood and Transplant such as: **Blood Groups and Red Cell Antibodies in Pregnancy**. If you have not seen these leaflets please ask your midwife or obstetrician.

Why is it important to know my blood group and D (rhesus) status?

Identifying blood group, D status and red cell antibodies in pregnant women is important to prevent Haemolytic Disease of the Fetus and Newborn (HDFN) and possible transfusion problems.

The four main blood groups are group O, group A, group B and group AB. There is another clinically significant blood group called D (previously called rhesus). You may be D positive or D negative. So for example, you could be Group A, D positive, or Group A, D negative. 15% of people have a D negative blood group.



What is Haemolytic Disease of the Fetus and Newborn (HDFN)?


Haemolytic Disease of the Fetus or Newborn (HDFN), previously known as rhesus disease, is a blood disorder in a fetus or newborn infant. HDFN may develop when a mother and her unborn baby have different blood types (called 'incompatibility'). The mother produces substances called antibodies that attack the developing baby's red blood cells.

The D status only matters if a D negative mother is carrying a D positive baby. If any of the red blood cells from the D positive baby get into the blood of the D negative mother, her immune system may recognise these as a 'foreign' substance and produce anti-D antibodies. Women who are D positive do not produce anti-D antibodies.

These anti-D antibodies can cross from the mother's blood into the unborn baby's blood and cause damage. If the level of anti-D antibodies becomes high, it can cause serious problems such as anaemia and jaundice; either while the baby is in the womb or after delivery.

How can Haemolytic Disease of the Fetus and Newborn (HDFN) be prevented?

HDFN is prevented by giving anti-D injections to mothers who are D negative and have no anti-D antibodies. This treatment can usually prevent HDFN and has been routine practice for many years.



What is anti-D and what are its associated risks?

Anti-D injections are made from plasma. Plasma is the fluid part of blood, which transports blood cells around the body. The plasma used in anti-D injections is collected from blood donors.

Very occasionally women can experience an allergic reaction to the anti-D injections. If you have any concerns please speak to your midwife or obstetrician.

Do all D negative mothers need anti-D?

Anti-D injections are only needed if a D negative woman is pregnant with a D positive baby. In about one in three pregnancies, the baby will be D negative and the anti-D injection would be unnecessary.

By identifying the unborn baby's blood group we can ensure that only women who need it will receive anti-D.

Anti-D is offered in some cases where vaginal bleeding, a traumatic event or amniocentesis occurs. When the fetal (unborn baby's) blood group is known to be D negative, those injections will not be needed. If healthcare staff do not know the result of the fetal D blood group, then an anti-D injection would be recommended.

Determining the unborn baby's blood group (fetal blood group)

A small amount of the unborn baby's DNA is present in the mother's blood. By isolating the baby's DNA from the mother's blood it is possible to determine the unborn baby's D blood group. This is the cell free fetal DNA (cffDNA) test.

NHS Blood and Transplant is now able to offer this screening test to some hospitals in England from April 2015.

Where and when can I have a cell free fetal DNA (cffDNA) test to determine my baby's blood group?

The blood screening test can be done by your community midwife from 12 weeks (usually 15 weeks) of pregnancy onwards.

How will the results affect my treatment?

Unborn baby is D negative

If the unborn baby is predicted to be D negative we suggest you do not have anti-D injections before or after giving birth. However, there is a very small chance (0.1%) that the baby might be found to be D positive after birth. In this case we will offer you an anti-D injection at that time.

Unborn baby is D positive

If your blood test report shows that your unborn baby is D positive, or the result is inconclusive, you will be offered an anti-D injection. However, 2.0% of these babies may in fact be D negative. This is of no concern as anti-D prophylaxis would have been offered in all cases if DNA testing had not taken place and the injection will not harm your baby.

What if I attend a different hospital?

When you attend another hospital, they may wish to offer you anti-D even if your baby is D negative. Please show them this leaflet and your cffDNA test results.

What options do I have?

When you have the test results, you can request to have the anti-D injection even if the result predicts that the unborn baby is D negative.

Equally you can decline to have anti-D injection(s) even if we recommend it in cases where your unborn baby is predicted to be D positive.

To understand the implications of the results from your cffDNA test and your treatment options, we recommend discussing your wishes with your midwife, doctor or other lead clinician who is responsible for your care.

A to Z of useful terms

Amniocentesis: a test sometimes carried out in pregnancy to check on the baby's progress in the womb. A small sample of the fluid surrounding your baby is taken for laboratory tests.

Anaemia: levels of red cells in the blood which are below normal.

Antibodies: are produced by your immune system to fight against infections or anything foreign which enters your blood.

Anti-D: an antibody which attacks red cells that are D positive. The cause of HDFN.

Anti-D immunoglobulin: ready-made anti-D which is given to stop you making your own anti-D. The plasma used to make anti-D injections in England is imported from counties with effective infectious disease screening programmes where there have been no reported cases of variant Creutzfeldt-Jakob Disease (vCJD)

Blood group: ABO and D are blood groups, e.g. A, D positive or A, D negative. Your blood group is made up of natural substances on the surface of your red blood cells.

Haemolytic Disease of the Fetus and Newborn (HDFN): anaemia and jaundice in newborn babies caused by antibodies in the mother affecting the baby's red cells.

Jaundice: raised levels of waste products from the breakdown of red blood cells. It gives a yellow colour to a baby's skin and eyes.



Plasma: the liquid part of blood. Prophylactic anti-D is made from the plasma of specially selected blood donors.

Prophylactic anti-D: ready-made anti-D given to D negative women to stop them making harmful anti-D. (See also anti-D immunoglobulin).

Prophylaxis: medicines given to prevent a harmful condition developing.

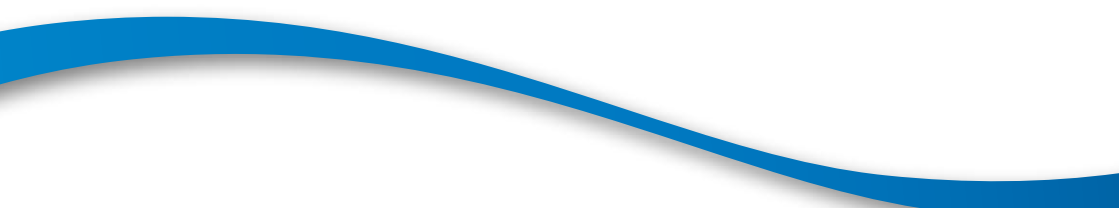
Red Cell Antibodies: antibodies are produced by your immune system to fight against infections or anything foreign which enters your blood. Red cell antibodies are your body's natural defence against red blood cells which are different from your own. Antibodies can destroy red blood cells.

Rhesus disease: is now known as Haemolytic Disease of the Fetus and Newborn (HDFN) caused by the anti-D antibody.

Rhesus positive or Rhesus negative: other names for 'D positive' or 'D negative' blood groups.

Routine antenatal 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 which may cause your baby's red cells to leak into your blood.

Variant Creutzfeldt-Jakob Disease (vCJD): Since the emergence of vCJD in the UK the medical advice has been not to use UK blood in manufacturing for plasma products. Plasma is imported from a publically owned source to treat patients born after 1st January 1996 as a risk reduction measure against the possible transmission of vCJD because as yet there is no specific test available for screening blood donors. This blood has been tested negative to UK standards for HIV, Hepatitis B and C. This measure is taken in line with advice from the Government advisory committee on the Safety of Blood, Tissues and Organs (SaBTO).



Data Protection

NHS Blood and Transplant keeps a record of all the tests it performs and any advice it offers to your healthcare team, to run its service effectively and safely. Your data will be held securely and in accordance with your rights under the Data Protection Act 1998.

Because of the rarity of haemolytic disease of the newborn, we ask hospitals for a few details about any baby that is affected, soon after the baby is born.

We need this information to help us improve our knowledge, and give the best care possible to all mums and their babies.

NHS Blood and Transplant is a Specialist Health Authority within the NHS.

NHS Blood and Transplant

NHS Blood and Transplant (NHSBT) saves and improves lives by providing a safe, reliable and efficient supply of blood and associated services to the NHS in England and North Wales. We are the organ donor organisation for the UK and are responsible for matching and allocating donated organs. We rely on thousands of members of the public who voluntarily donate their blood, organs, tissues and stem cells.

For more information

Visit nhsbt.nhs.uk

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