Blood Groups and Red Cell antibodies in pregnancy

Important patient information

During your pregnancy you will be offered tests to find out your blood group, and to see if you have any antibodies to red blood cells. These tests are normally carried out at the beginning of your pregnancy and again in the last three months.

This leaflet explains why blood groups and antibodies are important in pregnancy. It also contains details about preventing antibodies which can cause Haemolytic Disease of the Fetus and Newborn, (previously called *Rhesus* disease) in babies.

What are blood groups?

Red blood cells are the most common cells in your blood stream. They carry the oxygen you breathe around your body. Your red cells have natural chemicals on the surface which make up your blood groups. These blood groups are inherited from your parents.

The four main blood groups are group O, group A, group B, and group AB. But you also have another blood group called D. You may be D positive or D negative. So, for example, you could be group A D positive, or group A D negative.

In addition to ABO and D groups everyone has other, minor blood groups. Two of the minor blood groups that can be important in pregnancy are 'c' [little c] and 'K' [Kell].

What are red cell antibodies?

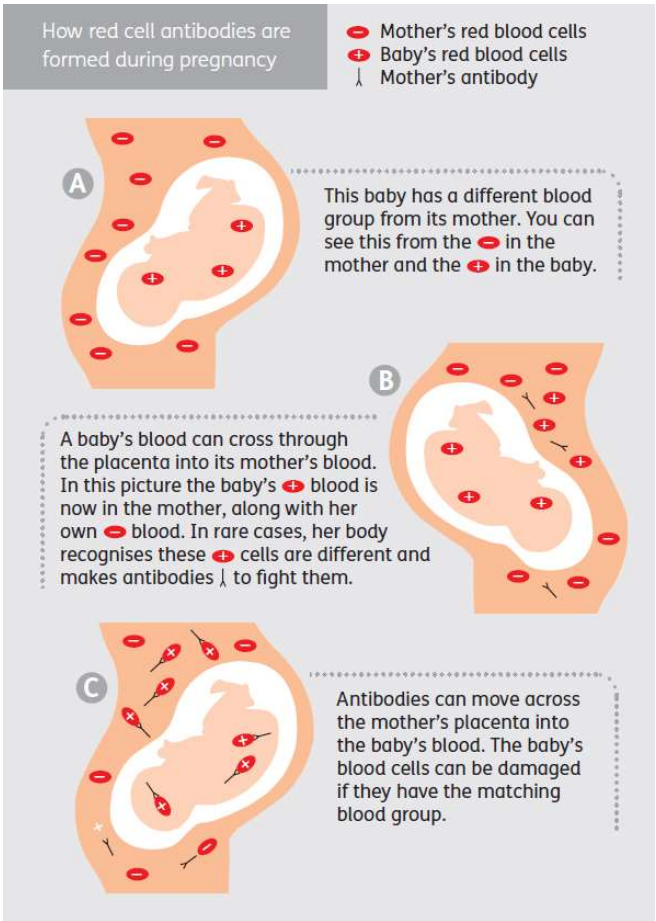
Antibodies are your body's natural defence against anything which is different from yourself. For example, a virus, vaccine or a different blood group. They are part of your immune system and protect your body against harmful invasions like infections.

You may form antibodies if blood cells with a different blood group from your own enter your blood stream. This can happen because of a blood transfusion or during pregnancy.

How are these antibodies made during pregnancy?

A few of your baby's blood cells may 'leak' into your blood during pregnancy. This usually happens when the baby is born.

If your baby's blood group is different from your own, your immune system may produce antibodies. This is rare. Only about three in 100 pregnant women develop antibodies, and most of these are harmless. The illustrations below show how this happens.



Why are blood groups and red cell antibodies important when I'm pregnant?

There are three main reasons:

1. If you need a blood transfusion.

If you need a blood transfusion the blood selected for you must be the correct blood group. It must also be the correct match for any antibodies you have.

2. To ensure you and your baby get the right treatment.

If tests show that you have made antibodies to your baby's blood you may need extra treatment.

How could red cell antibodies affect my baby?

Antibodies are generally harmless, but they can move from your blood stream into your baby's blood. Your baby's red cells could be damaged if they have the blood group which matches these antibodies.

In most cases the baby is not harmed. However, certain antibodies, particularly if they are strong, could destroy your baby's red cells. Your baby could become anaemic and develop jaundice after birth. This condition is called haemolytic disease of the fetus and newborn (HDFN). The antibody anti-D causes the most common form of this.

The antibodies remain in the mother's blood and they may also damage the red cells of a subsequent baby, if he or she has the same blood group as the first.

What will happen if I have antibodies to my baby's blood cells?

If you have antibodies you may be offered regular blood tests to measure the levels.

Your baby may be monitored by ultrasound scan during your pregnancy. This is just a precaution, and generally no treatment is needed. However, if the antibody levels rise very high, your baby may need to be delivered early. Your baby may also be tested soon after birth to make sure he or she is not anaemic.

Sometimes babies will need a blood transfusion in the womb. This is very rare and is performed in specialist hospital departments. This is called an intrauterine transfusion.

Which antibodies cause most problems?

The anti-D antibody is the most likely to cause problems. It can cause HDFN in your baby. It can form if your blood group is D negative and your baby's is D positive. There is a way to prevent anti-D antibodies forming, see below.

Anti-c ('little c') and anti-K (Kell) are other antibodies which can cause haemolytic disease of the newborn.

3. To find out if you are D negative.

If I am D negative, how am I affected?

It is important that you have a blood group test early in your pregnancy. If you are D negative you will be told about treatment during your pregnancy to prevent the formation of anti-D antibodies. This is important; if you form anti-D in this pregnancy it might affect a subsequent baby who has a D positive blood group.

How can I avoid making anti-D?

If you are D negative you can avoid making the antibody by receiving injections of a 'ready-made' antibody. This harmless antibody removes your baby's red cells from your blood before your body tries to make harmful anti-D to fight them.

The injection is made from the plasma of specially selected blood donors. It is also known as 'prophylactic anti-D' or 'anti-D immunoglobulin'. It has been used successfully for over 30 years.

When will I need treatment?

If you are D negative you will need treatment at the following times:

During pregnancy – routine treatment.

If you are D negative you should be offered 'anti-D' during the last three months of your pregnancy. This is called 'routine antenatal anti-D prophylaxis'. It is normally given as an injection at 28 and 34 weeks of pregnancy. However, you may be offered just one injection at 28 weeks.

During pregnancy – after an incident
There are some incidents which can cause your baby's cells to leak into your blood. A leak may be caused by any of the following:

- Hospital treatment for miscarriage or threatened miscarriage
- Termination of pregnancy
- Injury to your abdomen, such as a seat belt injury or a fall
- Vaginal bleeding
- Some tests such as amniocentesis (when a small sample of the fluid surrounding your baby is taken)
- Turning your baby from breech (bottom first) position by a doctor or midwife

You will need an injection of anti-D after any of these events when you are 12 weeks pregnant or more. You should receive the injection within three days of any of these incidents, but it can work up to 10 day later. Your doctor or midwife will advise you. The injection will not affect your baby.

After childbirth
Your baby will be tested after birth. If the baby is D positive it is important that you are offered an injection of anti-D within 3 days of giving birth. Ask your doctor or midwife for more information.

What if I do not want to receive anti-D injections?

When you are offered anti-D injections, either during your pregnancy or following the birth of your baby, you can choose whether or not to accept them. Receiving the injections of anti-D is recommended in order to protect any more babies you might have against haemolytic disease of the fetus and newborn. Speak to your midwife or doctor if you need more information.

Further Information

If you have questions about the information in this leaflet, or if there are things that worry you, please ask your doctor or midwife.

You may also find these websites useful:

Antenatal screening in general:
http://www.screening.nhs.ukalloantibody

Routine antenatal anti-D prophylaxis:
www.nice.org.uk/guidance/ta156/informationforpublic

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 haemolytic disease of the fetus and newborn.

Anti-D immunoglobulin: ready-made anti-D which is given to stop you making your own, harmful anti-D.

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 chemicals on the surface of your red blood cells.

Haemolytic disease of the fetus and newborn: anaemia and jaundice in newborn babies caused by antibodies in the mother affecting the baby's red cells.

Intrauterine transfusion: blood transfusion given to a baby in the mother's womb. Experts working in specialist hospital departments give these transfusions.

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.

Routine antenatal anti-D prophylaxis: injections of ready-made anti-D offered to women who are D negative to stop them making harmful anti-D. This is given during late pregnancy and after incidents which may cause your baby's red cells to leak into your blood.

Additional sources of Information

If you are interested in finding out more about blood transfusion and have access to the internet, you may find the following websites useful:

Welsh Blood Service
www.welsh-blood.org.uk

NHS Choice
www.nhs.uk/conditions/blood-transfusion

UK Transfusion Services
www.transfusionguidelines.org.uk

NHSBT
www.blood.co.uk

A print-friendly leaflet can be accessed at:
https://portal.welsh-blood.org.uk/bht/

Healthcare professionals – additional copies of this leaflet can be ordered at:
https://wbs-intranet.cymru.nhs.uk/bht/leaflets-order-form/

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Welsh Blood Service
0800 252266
welshblood.org.uk

Data Protection
The Welsh Blood Service 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 data protection legislation.

Because of the rarity of haemolytic disease of the fetus and 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.