



Platelet antigens and antibodies in pregnancy

Important patient information

This leaflet explains the blood test results that you have been provided with and what this means to you and your baby. It contains information about the importance of platelet antigens and antibodies in a condition known as Foetal and Neonatal Alloimmune Thrombocytopenia (FNAIT).

What are platelets?

Platelets are the smallest type of cells that circulate in the blood and are important in preventing and stopping bleeding. Sometimes, blood contains fewer platelets than normal, a condition known as Thrombocytopenia.

What is a platelet antigen?

Every platelet has natural proteins, on its surface, these are known as “antigens”. These include the Human Platelet Antigens (HPA) of which there are more than 30 (e.g. HPA-1, HPA-2, HPA-3, etc.). Many HPAs exist in two forms; a high frequency form designated ‘a’ and a low frequency form designated ‘b’, e.g. HPA-1a and HPA-1b.

How platelet antigens are inherited

Each child inherits half of their HPAs from each parent. For example, a child may inherit HPA-1a from the mother and HPA-1b from the father and their type would be HPA-1a1b. Alternatively, the child might inherit HPA-1a from both the mother and father and would be HPA-1a1a. The diagram overleaf shows how HPA is inherited.

What are antibodies?

Antibodies are an important part of the body’s immune system, which help us fight disease. They are formed when the body’s immune system comes into contact with a ‘foreign’

substance, for example bacteria, viruses, a vaccination or, during pregnancy or transfusion, a different HPA.

How are platelet antibodies formed during pregnancy?

During pregnancy, some of the baby’s platelets may pass into the mother’s bloodstream. If the baby’s HPA is different from the mother’s HPA, her immune system may ‘see’ the HPA on baby’s platelets as ‘foreign’ and make antibodies that bind to the HPA and destroy the baby’s platelets. These antibodies are called HPA antibodies or anti-HPA.

How do platelet antibodies affect pregnancy?

HPA antibodies made in the mother can cross the placenta and enter the baby’s bloodstream. When the HPA antibodies come into contact with the baby’s platelets they can damage or destroy them. This causes the number of platelets (known as the platelet count) in the baby’s blood to decrease. This condition is known as Foetal and Neonatal Alloimmune Thrombocytopenia or FNAIT, and occurs in approximately 1 in 1,000 pregnancies.

In the UK, ~ 80% of FNAIT cases are caused by anti-HPA-1a, ~ 15% by anti-HPA-5b and ~5% by other antibodies.

How does FNAIT affect my baby?

The effect on your baby depends on how many of baby’s platelets are damaged or destroyed. In mild cases, it might not affect your baby at all. In severe cases the damage to your baby’s platelets can cause severe bleeding, which may have serious effects to your baby’s health.

How are babies with FNAIT treated?

Once the condition is recognised or suspected, your baby can be given a transfusion of platelets that will have a similar HPA type to that of the mother. This increases the number of platelets in your baby’s blood and will not be destroyed by the HPA antibodies present.

What happens afterwards?

The number of platelets that your baby has will gradually return to normal within a few days



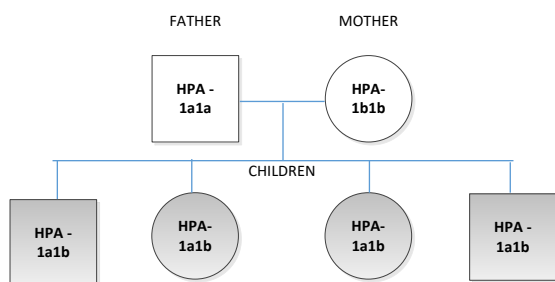
or weeks after birth. After that, your baby's blood will be entirely normal, and he or she should have no future problems.

The diagram below illustrates how HPA-1 is inherited. The square boxes indicate males; circles indicate females.

The shaded boxes indicate children potentially affected by FNAIT; clear boxes indicate unaffected children.

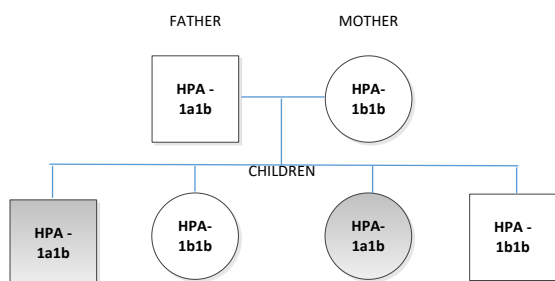
Example 1

The mother is HPA-1b1b and the father is HPA-1a1a. In this case, the children from this partnership will always be HPA-1a1b and are all at risk of being affected by FNAIT.



Example 2

The mother is HPA-1b1b and the father is HPA-1a1b. In this case, the children may be either HPA-1a1b or HPA-1b1b depending on whether the baby inherits HPA-1a or HPA-1b from the father. There is a 50% chance that a child will inherit HPA-1a and be at a risk of FNAIT.



Can platelet antibodies affect my health?

HPA antibodies will not affect the platelets in the mother's blood. However, they need to be

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considered when selecting suitable blood if you need a blood transfusion. This is why you (the mother) will receive a card, identifying which HPA antibodies have been made. This card should be kept safely and shown to the medical staff that may be treating you.

What happens to the antibodies in my blood?

Once the antibodies are made, they may stay in the mother's blood for a long time, sometimes for life.

What about future pregnancies?

If a mother has had a baby affected by FNAIT, any future pregnancies may be at risk of FNAIT, and this will largely depend on the HPA type of the father. For example, where the mother is HPA-1b1b, has made a HPA-1a antibody, and the father is HPA-1a1a, there is a 100% chance of the baby inheriting HPA-1a and being at risk of FNAIT (see example 1). Alternatively, the same mother, where the father is HPA-1a1b, has a 50% chance of the baby being affected by FNAIT (see example 2).

If you have had a previously affected baby and become pregnant again, show your antibody card to your GP or obstetrician and ask them to refer you to a Foetal Medicine Unit (FMU) as early as possible. This will enable your pregnancy to be closely monitored and, if necessary, for any treatment to be given.

Further information and support

Please speak to your doctor or midwife. You may also find the following contact/link useful: NAIT Babies, run by families who have been affected by FNAIT: www.naitbabies.org

This information does not replace the guidance provided by your treating clinical team.

For more information please contact the Welsh Blood Service on 01443 622126.

Acknowledgements to NHS Blood and Transplant.



Welsh Blood Service

0800 252266

welsh-blood.org.uk

Data protection

The Welsh Blood Service holds records of all tests performed and advice it offers to your healthcare team, to run its service efficiently and safely. Your data will be held securely and in accordance with your rights under data protection legislation.