Histocompatibility testing

Platelet transfusion suitability testing – information for patients

What is histocompatibility testing?

Histocompatibility testing helps decide if we can find a suitable donor to provide specific platelets to patients who do not respond well to some platelet transfusions (either by not responding adequately or by responding with an unusual transfusion reaction), to patients who have a platelet function disorder, or in some cases, to help prevent a poor response developing.

Most platelet transfusions use platelets form the stocks in the blood bank and in most cases these work well. However, in some cases, the patient's body destroys the platelets that are transfused. There are several reasons why this may happen. One of these is because the patient has antibodies in their blood which react with HLAs (human leucocyte antigens) or HPAs (human platelet antigens).

You inherit your HLA type (also called tissue type) and HPA type from your parents. HLAs are found on the surface of most cells in the body. HPAs are also found on the surface of platelets. There are many different HLA types and so most people are different from each other. Because of this, it is likely that most of the platelets you normally receive will come from donors whose HLA type is different to your own. This can be a problem if you have HLA antibodies in your blood. HLA antibodies are made by your body's immune system and can destroy platelets you are given from the transfusion. You may have HLA antibodies if you have previously had a blood transfusion, or if you have been pregnant.

We may need to carry out histocompatibility testing if you do not respond well to some platelet transfusions. If you respond poorly to a platelet transfusion, we will give your blood sample to the Histocompatibility and Immunogenetics (H&I) laboratory to find out whether this is the reason you do not respond well to standard platelet transfusions.

There are two tests which the laboratory will carry out first – HLA typing and HLA antibody testing. Some patients will also need HPA typing and HPA antibody testing.

HLA and HPA typing

We will find your HLA type by testing a sample of your DNA, which we get from your blood cells. The laboratory will store a sample of your DNA in case they need to carry out more tests in the future. In some cases, the laboratory will also use your DNA sample to find your HPA type.

We will give the results of your typing to your consultant haematologist. We may also send copies of your results to the other health-care staff who are treating you (for example, specialist nurses) and to any other hospitals you may transfer to in the future. The H&I laboratory will also keep copies of the results.

HLA and HPA antibody testing

We need a separate blood sample to test for HLA antibodies. HLA antibodies can appear, disappear and reappear over time, so you may need to provide more samples if you need regular platelet transfusions over a long period of time. We will use these samples to check whether any antibodies have formed in your blood.

Some patients may make HPA antibodies as well as, or instead of, HLA antibodies. In these circumstances, the patients may respond poorly to HLA-selected platelet transfusions (see below) as a result of the HPA antibodies which are also found on platelets.

We will give the results to your consultant, who will work with us to decide if you need to receive specially selected platelets.

HLA selected platelets

If the results of your tests show that you have HLA antibodies, you may need to receive HLA-selected platelets. If this is the case, our H&I staff will use the results of your HLA typing and antibody testing to choose platelets from blood donors whose HLA type is suitable for you. This will mean that your HLA antibodies should not react with the specially selected platelets. In most cases, your response to platelet transfusions should improve. In rare cases, this may not happen and you may need more tests to see if there is something else which is affecting these transfusions. Because of the complexity of selecting platelets, suitable donors may, at times, be difficult to find.

HPA selected platelets

If the results of tests for HPA antibodies and HPA typing show why you are not responding to HLA-selected platelets, you may need to receive HPA-selected platelets. In some cases, you may need to receive HLA and HPA-selected platelets that will not be affected by the HLA and HPA antibodies in your blood. As a result, your response to platelet transfusions should improve.

Effectiveness of platelet transfusions

We need to know the level of response (increment) in order to provide the best match of platelets for you and to prevent any unnecessary transfusions. The increment is measured from blood samples taken before and 1 hour after transfusion. It is important that these samples are taken so that your consultant can make a decision about your transfusion treatment.

What happens to my sample?

When we no longer need your samples for testing, or we have more samples than we need, the law allows us to use these anonymously for quality control (making sure our tests are working correctly), research (depending on whether this is approved by an ethics committee) or introducing new procedures, or for educating and training doctors, nurses, scientists and other professionals working in health care. This helps us maintain accurate testing procedures and improve our knowledge, and so provide the best possible care for all patients.

However, if you do not want us to use your samples for any of the purposes above, you must tell your doctor or the person taking your blood (or both). We will respect your wishes and dispose of any samples we no longer need.

For additional copies of this leaflet and for any further 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 keeps a record of all the tests it performs and any 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.

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