

Histocompatibility testing for stem-cell transplant patients

What is histocompatibility testing?

Histocompatibility testing helps decide if we can find a suitable donor to provide the stem cells for a transplant. For a transplant to be successful, it is important to find a donor whose HLA (human leucocyte antigen) type (also called tissue type) is as close as possible to your own. The better the match between you and the donor, the better the chances of the transplant being successful in the long term.

You inherit your HLA type from your parents. HLA antigens are found on the surface of most cells in the body and are an important part of your body's immune system. If your HLA type is different to the donor's, the immune cells from the donor may recognise the cells in your body as foreign and attack and seriously damage them. Your own immune cells may also recognise the donor's stem cells as foreign and attack them, causing the transplant to fail. The better your HLA type matches with your donor, the better the chances of the transplant being successful in the long term.

To identify any suitable donors, we will send your blood sample to the histocompatibility and immunogenetics (H&I) laboratory for them to carry out the necessary tests.

What is HLA typing?

There are many thousands of different tissue types and so most people are different from each other. The best chances of finding a good match are among your close family members, especially brothers and sisters. However, it is also sometimes possible to find a good match with donors who are not related to you. We must find your HLA type to help find a suitable donor for your transplant. We will do this 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 we need to carry out more tests in the future.

[Continued on the next page...](#)

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Patient information Page 2 of 3

We will give the results of your HLA typing to your hospital consultant. We may also give them to the consultant who is responsible for transplants, if this person is different to your doctor.

If we need to look for a donor who is not related to you, we will also send your results to the bone marrow registries that carry out searches for suitable donors. The H&I laboratory will also keep copies of your results and use them to help work out whether any relatives or other donors match your HLA type.

Testing after your transplant

If you have had a stem-cell transplant, we may give samples to the H&I laboratory to assess how the transplanted cells are responding to your body. This is called chimerism monitoring. The laboratory carries out this monitoring by testing your DNA and the donor's DNA (taken from your blood cells and the donor's blood cells before the transplant, and blood taken from you after your transplant) and comparing the DNA in your body (known as your 'DNA profile') before and after the transplant. A number of different genetic markers (similar to DNA fingerprints) show what proportion of blood cells have come from the donor and whether there are still any of your own cells in your body. This will help the medical staff who are caring for you to plan your 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 healthcare. 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.

[Continued on the next page...](#)

This patient information leaflet does not replace the guidance provided by your treating clinical team. Your treating clinical team should advise you of the options for treatment, advise of any alternative treatment and associated risks. Your treating clinical team should ensure that you are aware of the material risks associated with the treatment advised.

If you are unsure about any aspects of the treatment/care, ask your treating clinical team to explain.

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.

All information provided to NHS Blood and Transplant is used in accordance with the General Data Protection Regulation (GDPR) and all other applicable privacy legislation. For more information on how we look after your personal details or to find out more about your privacy rights visit www.nhsbt.nhs.uk/privacy or call 0300 123 23 23. NHSBT are committed to keeping your data safe and confidential.

For more information

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