



Tissue typing for kidney donation

This information sheet explains about tissue typing, what we are doing when we see if your kidney is a good match for your child and why we are doing it.

Step one: blood group

If you are considering donation of a kidney to your child, you will first need to have your blood group checked. If your child is blood group AB, which is rare, a person with any blood group can donate. If your child is one of the other blood groups (A, O or B), you must either be the same blood group or blood group O, which can donate to all. You may not necessarily be a blood group that is compatible with your child. If you are not, you are excluded from donating your kidney at present. Research may find ways around this in the future, but we do not know when this could happen.

Step two: tissue typing

If your blood group is compatible, we can then proceed to tissue typing to see how 'well matched' your kidney is to your child. Contrary to what it sounds like, tissue typing only involves a simple blood test.

The tissue type is what makes someone react to a donated kidney. Normally, tissue type is involved in the process of getting rid of viruses from the body. There are six principal pieces of protein in the cells of the body that are involved in this process. These are called HLA antigens and scientists have given them each a different number, as they have been discovered. Your child inherited three of the six from each parent, but cannot inherit a number that neither parent has

For example

if the mother's

HLA numbers are: 1 2 3 4 5 6

and the father's

HLA numbers are: 7 8 9 10 11 12

then their child could

have HLA numbers: 1 2 3 7 8 9

or: 4 5 6 10 11 12

or: 2 4 5 7 9 10

but could not be: 1 2 3 7 10 13

The outcome of this is that if you are not the child's biological parent, for example, a step mum or step dad, foster parent or adoptive parent, you are unlikely to be a good match, so we would not usually wish to consider you as a donor.



Special note: paternity test

It is important for you to understand that tissue typing is similar to what is sometimes called 'paternity testing'. That is, the results may help to confirm (or not) the biological parents of the child.

We ask that you consider this carefully and before agreeing to the test, we would want you, as a family, to decide who should be told if the results are unexpected. That is, if the tests were to show that one or other of you is not the 'blood parent', would both of you, one of you or neither of you want to be told?

If you have any questions or concerns about this, you must discuss them either with the doctor or nurse or your family doctor (GP) before undergoing the blood test. We ask that you consider this carefully.

Frequently asked questions about HLA numbers

Does it matter if HLA numbers are a good match or not?

We prefer a good match, although this is more important for deceased donor kidneys. When a deceased donor kidney becomes available, UK Transplant matches the six numbers that the donor has with the best match for all the potential recipients on the on-call register.

One way of thinking of this is that it is very much like the National Lottery. That is, we all have our own six numbers and if the donor had the same six numbers as one of the recipients on the list, they would be offered that kidney. This is called a '6-antigen match' or a 'full house match'. Just like winning the lottery jackpot, this does not happen very often. Five numbers matching is a bit more common, and four numbers matching is a bit more common again. However, we do not like to take less than four numbers matching as far as possible, unless the child has numbers that are extremely uncommon in the population and very unlikely, therefore, to be matched.

If the child is lucky enough to receive a full house 6-antigen matched kidney from a deceased donor, then this is the only match that does as well as a kidney from a parent, even though the parent may only have three numbers in common with their child.

This is because the parent may have other things in common that we do not match for or even understand. It is also because the kidney is taken from the parent and very rapidly transferred into the child, with very little wait in between.

Another reason why we prefer well-matched kidneys is that if your child meets with an HLA number that they do not have, they make an antibody to it. This means that if the transplant fails, they cannot be given that number again. This makes it more difficult to find a transplant for them the second time.

For example:

if the donor has HLA numbers:

1 2 3 4 5 6

and the recipient has:

1 2 3 7 8 9

then the recipient will make antibodies to numbers 4, 5 and 6.

Therefore the next donor will not be able to have these numbers, as the child would reject the kidney. Some HLA numbers are more common in the population than others, so there are some numbers that we are particularly keen not to mismatch.



Is it possible to decrease the chances of my child developing antibodies to my mismatched numbers, if they were to have a deceased donor kidney first?

What we can do is to put your child on-call for a new kidney, but only accept a kidney with your mismatched numbers excluded.

For example:

If you are: 1 2 3 4 5 6
and your child is: 1 2 3 7 8 9
then we can ask UK Transplant to put your child on-call, but not offer any kidney that has numbers 4, 5 or 6.

Your child should not then make antibodies to any of your mismatched numbers but we can never guarantee this. Blood may need to be given at the time of the transplant, and as blood cells also carry these numbers and the blood may have come from several different donors, your child may make antibodies to them. Some antibodies also react with more than one HLA number.

The final step: cross match

When we have decided who will be the donor, we need to put the donor's blood and the child's blood together to be sure that they do not react. This is called cross matching. They will only react if the recipient has HLA antibodies already, for example, if they have had a previous transplant or if they have been given blood previously. If the bloods react against each other, this is called a 'positive cross match' and the transplant cannot go ahead. If the cross match is negative, all is well and the donor can then carry on with tests to establish that he or she is healthy and able to donate a kidney.

If you have any questions, please call your clinical nurse specialist in the Transplant Support Unit on 020 7405 9200 ext 7897