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Having a live donor kidney transplant when blood groups are incompatible

Renal and Transplant Department

Information for Patients

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Introduction

This leaflet aims to explain about blood group incompatible (where blood groups do not match) transplantation and the risks, to help you decide whether this is the right option for you.

Most kidney transplants cannot be performed if the blood groups are not compatible. The reason being the recipients blood contains antibodies that react to the donor's blood type, and this antibody reaction would result in rejection and loss of the kidney. Antibodies are proteins that recognise anything foreign in your body and alert your immune system to destroy it.

Using special techniques and anti-rejection medications, blood group incompatible kidney transplants can now be performed, but this depends on the level of these antibodies.

What blood groups are compatible?

There are 4 main blood types or groups: A, B, AB and O. We sometimes refer to blood groups as ABO. The blood group you belong to is determined from a blood test. We are all well suited (compatible) with our own blood type and possibly with some others:

- Blood Group O is **only** compatible with blood group O (the universal donor).
- Blood Group A is compatible with blood groups A and O.
- Blood Group B is compatible with Blood groups B and O.
- Blood Group AB is compatible with **all** the blood groups, AB, A, B and O (the universal recipient).

What does a blood group incompatible kidney transplant involve?

In order to increase the chances of a successful outcome for a blood group incompatible (ABOi) transplant, specific treatments called desensitisation are now available, alongside anti-rejection medication. This aims to combat any antibodies you may have formed against your donor's blood group. The antibodies which could harm the donor kidney are removed in order to reduce the level in the recipient's blood circulation, using a desensitisation treatment called immunoadsorption.

Immunoadsorption treatment:

The antibodies are found in the plasma portion of your blood. Immunoadsorption is a treatment where blood is passed from your body through a machine that is very similar to a dialysis machine. A special filter in the machine removes the specific antibodies in your blood that would otherwise cause the donor kidney to be rejected. Your plasma is then returned to you during the treatment with a much lower level of these antibodies.

You will be connected to the machine for the whole of the treatment. The sessions last 4 to 6 hours and the number of sessions needed will depend on the amount of antibodies present. Most people need 2 to 4 sessions, but some people may need a lot more.

At the end of some sessions you will be given immunoglobulin (IVIg) treatment from the machine. IVIg is a medicine product made up of antibodies that can be given through a vein (intravenously). Each antibody made by your body is slightly different, because it fits like a lock and key to every foreign substance that gets into your body. The IVIg treatment will play a role to reduce this.

Occasionally people feel light-headed or sick after immunoadsorption. You should eat breakfast or lunch on the day of treatment as this can help prevent or reduce the feeling. You will be supported and monitored by a dialysis nurse during the treatment, which will be carried out on our wards. You will also need to arrange for a relative or friend to take you home and possibly stay with you.

Your blood group antibodies will be monitored during this process and the transplant will only proceed if the specific antibody levels can be made low enough. Occasionally it may not be possible to reduce your antibodies to an acceptable level; in this case the transplant will not proceed.

Sometimes the level of antibodies may increase after transplantation and further sessions of immunoadsorption will be needed. This will be monitored and identified through your aftercare.

Anti-rejection (immunosuppressive) medicines:

You will be given anti-rejection medication both before and after your kidney transplant. These are called immunosuppressants, because they work by inhibiting or preventing the activity of the immune system. All patients who have a kidney transplant will need to take anti-rejection medication for the life of the kidney.

You can read more about these medications in leaflet number 408 "Medicines after kidney transplant". If you have not been given a copy please ask for one. Leaflets are also available online from our patient information store www.yourhealth.leicestershospitals.nhs.uk

Recipients who are incompatible with their donor usually need a higher dose of anti-rejection medication, than those recipients having a compatible transplant. These usually include tacrolimus and mycophenolate, which you will be asked to start taking about a week before your transplant depending on your degree of incompatibility. This is to make sure that there is a good amount of the anti-rejection drug in your blood at the time of surgery.

You may also be given some additional medicines through a drip, 2 to 4 weeks before your transplant, that will further help to reduce the risk of rejection. This may include rituximab. Rituximab is a therapy that blocks part of your immune system and reduces the cells that make antibodies, and is used for blood group incompatible transplantation. It is given once through a vein (intravenous infusion), 4 weeks before surgery. We will carry out a final cross-match against your donor before giving you rituximab.

When does the process start?

After discussion with your transplant doctors and assessment of your ABO antibody levels, a plan is made on when you will need to come to hospital to start the treatments mentioned above.

The immunoadsorption sessions are usually carried out the week of your transplant date and are done as a day patient. If you do not have a dialysis line or fistula already in place, to allow access to your bloodstream, you will need to have a line inserted before the treatment can start. We will arrange for your treatment to start in hospital.

Who is suitable for this type of transplant?

Blood group samples will be taken to measure the amount of blood group antibodies present in your body (this is known as a titer test). The amount of the antibody present will determine whether the transplant can take place and how much treatment is needed before the transplant operation. If your antibody level is too high at this stage we would not go ahead with the transplant, and we would advise that you consider the paired exchange programme (National Kidney Donor Sharing Scheme) which your Live Donor Co-ordinator will tell you about. In this case we would advise you to go through this a minimum of 2 times before considering a blood group incompatible (ABOi) transplant.

What are the additional risks from having an ABOi transplant?

- **Infection:**

As with all kidney transplants, there are risks associated with infections in relation to the operation and the anti-rejection medicine. These drugs weaken your immune response and make you more susceptible to some infections. In ABOi transplants, there is a slightly higher risk of infections associated with the higher total doses (burden) of immunosuppressive medications. But you will undergo a lot of rigorous monitoring during your hospital stay and when attending outpatient visits.

- **Rejection:**

The combined effect of the treatments may give you higher total doses (burden) of anti-rejection medication than would be used for a compatible transplant. For compatible transplants, around 10 to 15% will experience some rejection over the first year. For blood group incompatible transplants this may rise to 25%.

You will be closely monitored after your transplant so we can spot and treat any signs of rejection.

- **Survival of the transplant:**

If you are compatible with your donor, there is a 7% risk that your transplanted kidney will stop working within the first 3 years after transplantation. If you are blood group incompatible, the risk is 10%.

The outcome of an ABOi transplant is generally better than or similar to the outcome from a deceased donor.

Are there any alternatives?

All of this may sound worrying, but the chances are that if you are at the stage of considering a blood group incompatible transplant, you have exhausted all live donor options. You may already have been entered into the National Kidney Donor Sharing Scheme where you and your donor are paired with a donor and recipient in another transplant unit to improve the chances of a better matched kidney for both recipients. You have the option to remain in the National Kidney Donor Sharing Scheme and/or on the National Transplant Register for a deceased donor transplant.

It is often considered better in the long term to have a transplant, even with a higher risk blood group incompatible transplant, than to remain on dialysis.

All patients are different. We strongly advise you to discuss your situation and options carefully with your medical team and doctor, to make sure you understand the implications for you personally. Your medical team will be happy to discuss any questions or concerns you may have.

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