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 tells you about having a blood group which does not match (incompatible) the transplant donor's blood group. It will tell you about transplantation, the risks, and help you decide if this is the right option for you.

Most kidney transplants cannot be done if the blood groups are not compatible. This is because the antibodies your blood can react to the donor's blood type. The antibody reaction could cause 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 medicine, we can now do blood group incompatible kidney transplants. 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. We find out what you blood group is through 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 happens during a blood group incompatible kidney transplant?

To raise the chances of a successful blood group incompatible (ABOi) transplant, we use specific treatments called desensitization. We do this alongside anti-rejection medicine. We try to combat any antibodies you may have formed against your donor's blood group. The antibodies which could harm the donor kidney are removed to reduce the level in the recipient's blood circulation. We do this using a desensitisation treatment called immunoadsorption.

Immunoadsorption treatment:

Antibodies are in the plasma of your blood. Immunoadsorption is a treatment where we pass blood from your body through a machine that is similar to a dialysis machine. The machine has a special filter that removes the antibodies in your blood that would cause the donor kidney to be rejected. Your plasma is then returned to you during the treatment with a much lower level of antibodies.

We will connect you to the machine for each treatment session. The sessions last 4 to 6 hours. How many session you will need depend on the amount of antibodies in your blood. Most people need 2 to 4 sessions. Some people may need a lot more.

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

Sometimes people feel light-headed or sick after immunoadsorption. You should eat breakfast or lunch on the day of treatment. This can help prevent or reduce the feeling. A dialysis nurse will support and monitor you during the treatment. We will do this on ward. You will need to arrange for a relative or friend to take you home. You may also want to have someone stay with you after dialysis.

We will monitor your blood group antibodies during this process. We will only do the transplant if the antibody levels are made low enough. Sometimes it may not be possible to reduce your antibodies to an acceptable level. In this case we will not be able to the transplant.

Sometimes the level of antibodies may increase after transplantation. You will need more sessions of immunoadsorption. We will monitor and identify this through your aftercare.

Anti-rejection (immunosuppressive) medicines:

We will give you an anti-rejection medicine before and after your kidney transplant. These are called immunosuppressants. They work by reducing the activity of the immune system. All patients who have a kidney transplant will need to take anti-rejection medicine for the rest of their life. Visit: www.yourhealth.leicestershospitals.nhs.uk search for 'Medicines after kidney transplant' or leaflet number 408 for more information.

Incapability with the blood group of the donor means you will need a higher dose of anti-rejection medicine. This often includes tacrolimus and mycophenolate. You will need to start taking these about a week before your transplant depending on your 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.

We will give you some more medicines through a drip. This will be 2 to 4 weeks before your transplant. This will help to reduce the risk of rejection as well. We may give you rituximab. Rituximab is a therapy that blocks part of your immune system. It reduces the cells that make antibodies. It is used for blood group incompatible transplantation. We give it 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?

Your transplant doctors will speak with you first. They will assess your ABO antibody levels. They will make a plan for when you will need to come into hospital to start the treatments mentioned above.

The immunoadsorption sessions are often carried out the week of your transplant date. We do this as a day patient. If you do not have a dialysis line or fistula already in place, we will need to insert a line before treatment can start. We will arrange for your treatment to start in hospital.

Who is suitable for this type of transplant?

We will take blood group samples to measure your antibodies (this is called a titer test). The amount of the antibody in your blood with decided if you can have a transplant. It will also decide 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. We would advise that you consider the paired exchange programme (National Kidney Donor Sharing Scheme). Your Live Donor Co-ordinator will tell you about this. In this case we would advise you to go through this at least 2 times before considering a blood group incompatible (ABOi) transplant.

What are other risks are there from having an ABOi transplant?

- **Infection:**

As with all kidney transplants, there is a risk of infection. This risk comes from the operation and the anti-rejection medicine. These drugs weaken your immune response. They make you more at risk to some infections. Taking more amounts of immunosuppressive medicine slightly increases the change of getting infection. This is because your immune system is more suppressed. We do a lot of careful monitoring during your hospital stay and when attending outpatient visits to reduce the risk of infection.

- **Rejection:**

Using these treatments together may mean you need more anti-rejection medicine overall. 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%.

We will closely monitor you 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 often better than or similar to the outcome from a deceased donor.

Are there any alternatives?

All of this may sound worrying. 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 be part of the National Kidney Donor Sharing Scheme. This scheme matches kidney donors and patients. In this program, you and your donor are paired with another patient and donor to help both people get a better matched kidney.

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. This is even with a higher risk blood group incompatible transplant than to remain on dialysis.

All patients are different. We strongly advise you to talk about your situation and options carefully with your medical team and doctor. This is to make sure you understand the each option means for you personally. Your medical team will be happy to talk about any questions or concerns you may have.