

# Blood group incompatible kidney transplantation

**This leaflet explains more about blood group incompatible transplantation, including the benefits, risks and alternatives, and what you can expect when you come to hospital. If you have any further questions, please speak to a doctor or nurse caring for you.**

You will have already been given information about the different types of kidney transplants. The aim of this leaflet is to explain more about blood group incompatible kidney transplantation, which is different from 'routine' transplantation in a number of ways. The transplant team here at Guy's and St Thomas' have performed over 100 transplants of this kind, making us one of the most experienced teams in the UK for this sort of transplantation. We are conducting important research in this area, so you may be asked to participate in a research study. Participation is entirely voluntary, and deciding that you do not want to be involved will not affect your clinical care in any way.

There are two forms of incompatibility:

- Blood group incompatibility is when the donor and recipient are different blood groups.
- HLA tissue type incompatibility is when there are antibodies against the donor's tissue type.

This leaflet explains more about blood group incompatible kidney transplantation.

For more information about HLA incompatible kidney transplants, please ask for a copy of our leaflet, **HLA incompatible kidney transplantation**.

## What is blood group incompatible transplantation?

Until recently, a kidney transplant could not be performed unless both the transplant recipient and the donor's blood were compatible.

In order to increase the chances of a successful outcome for a blood group incompatible transplant, specific treatments (plasma exchange or immunoadsorption) alongside medication are now available to combat any antibodies you may have formed against your donor's blood group.

### **ABO blood type compatibility at a glance**

If your blood group is not the same as your donor, transplantation could result in rejection and loss of the kidney unless additional treatment is given. Blood groups are classified into groups on the basis of the ABO system where there are four groups (A, B, AB and O). We therefore sometimes refer to blood group incompatibility as ABO incompatibility.

Everyone has one of these four blood types: A, B, AB or O. We are all compatible with our own blood type and possibly with others.

- Blood group AB patients can normally receive a kidney from any other blood group.
- Blood group A patients can normally receive a kidney from someone with an O or A blood type.
- Blood group B patients can normally receive a kidney from someone with an O or B blood type.
- Blood group O patients can normally only receive a kidney from someone with the O blood type.

## **What are the risks of blood group incompatible transplantation?**

There are some risks that are associated with transplant surgery, regardless of whether you are compatible or incompatible with your donor. These risks include the risk of bleeding (both during and after the operation), wound infection, and death. There is more detail about the risks associated with transplant surgery in chapter 2 of **Your Guide to Kidney Transplantation**. Please ask for a copy of this booklet if you don't have one.

There are additional risks associated with a blood group incompatible transplant, which include:

### **Rejection**

There is an increased risk of rejection after blood group incompatible transplantation. For compatible transplants, around 25% will experience some rejection over the first year. For blood group incompatible transplants, this may rise to 30%.

There are two types of rejection: antibody-mediated rejection, and cell-mediated rejection.

With blood group incompatible transplants, the most common and risky type of rejection is antibody-mediated rejection. The risks are highest within the first month after the transplant. If you have good kidney function for the first month following surgery, the risk of rejection decreases.

An early antibody-mediated rejection can be difficult to treat, and may require more plasma exchange (see below) and additional medication. If the rejection does not respond to treatment, the transplant could fail.

Cell-mediated rejection tends to be easier to treat with intravenous (given through a drip) steroids.

### **Bleeding**

All surgery carries the risk of bleeding, but when we remove antibodies with plasma exchange, we also remove some of the factors in your blood that are important for making your blood clot. This could increase your risk of bleeding during and after transplantation. It may be necessary to replace these factors before the surgery.

### **Infections**

All transplant patients are at increased risk of infections due to the immunosuppressive medications that we give. For patients who have a blood group incompatible transplant, we tend to prescribe stronger immunosuppressants, and this may increase your risk of infection. Sometimes these infections can be very serious, and may even be fatal. You will be closely monitored after the transplant for signs of infection.

## **Patient survival**

Although all types of transplant surgery carry the risk of death, this risk is increased with blood group incompatible transplantation. This is partly due to the greater risk of infection associated with taking stronger immunosuppressive medications, which are necessary to help prevent rejection of the donor kidney.

If you have been dependent on dialysis for a long time, you may have other health problems which reduce your ability to survive a major complication, such as a serious infection.

## **Survival of the transplant**

If you are compatible with your donor, there is a 10% risk that your transplanted kidney will stop working within the first five years after transplantation. If you are blood group incompatible, the risk is 15%.

## **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 possible compatible donors. 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 centre 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 waiting list for a deceased donor transplant. All patients are different and we recommend you discuss your options with your doctor if you have any questions or concerns.

Blood group incompatible transplantation is risky, but it is often considered better in the long term to be transplanted, even with a high-risk transplant, than to remain on dialysis.

## **Consent – asking for your consent**

We want to involve you in decisions about your care and treatment. If you decide to go ahead, you will be asked to sign a consent form. This states that you agree to have the treatment and you understand what it involves.

If you would like more information about our consent process, please speak to a member of staff caring for you.

## **Antibody removal: How can I prepare for the treatment?**

In order for the treatment to take place, we need to have access to your blood – this is known as vascular access. If you are receiving regular haemodialysis treatment, you will probably already have vascular access, which can be used. If you are not receiving haemodialysis, you will need to have a dialysis line inserted. Most people will need more than one antibody removal treatment and will need a tunnelled haemodialysis line to be inserted. If you only need one treatment then a temporary haemodialysis line can be used. For more information about these procedures, please ask us for a copy of our leaflets, **Having a tunnelled haemodialysis line inserted**, or **Having a non-tunnelled haemodialysis line inserted**.

## What happens during the treatment?

The treatment will take place on Astley Cooper Dialysis Unit, 5<sup>th</sup> Floor, Borough Wing, Guy's Hospital, and will be carried out by specialist nurses. Plasma exchange usually takes 2-3 hours, so you may wish to bring a book, ipod, laptop or tablet with you to help pass the time. You may also wish to bring a snack. If you are receiving regular dialysis, we will dialyse you after the plasma exchange.

You will receive treatment using a machine that is very similar to a dialysis machine. The machine will filter your blood and remove the plasma (the liquid component of blood), which contains your antibodies. The plasma will then be replaced with albumin (a type of protein) or a similar product – we call this plasma exchange. The number of treatments required depends on the levels of antibodies in your blood.

Some patients will undergo a technique called immunoadsorption instead of plasma exchange. In this case, the blood is passed through a column that binds antibodies. The blood and plasma are then returned to the patient.

These treatments will be given during the days leading up to your transplant, and the type of treatment (plasma exchange or immunoadsorption) will depend on the amount of antibodies in your blood. In some cases, with low antibodies, no treatment will be necessary, despite the antibody incompatibility.

## After the treatment

Occasionally people feel tired or light-headed after having plasma exchange or immunoadsorption. You should eat breakfast or lunch on the day of treatment as this can help to prevent or minimise this feeling. You will also need to arrange for a relative or friend to accompany you home.

Your antibodies will need to be checked on the morning of the surgery. If we haven't been able to reduce the antibody level sufficiently, it may be necessary to postpone the transplant at short notice. If this is the case, we usually carry out further treatments to try to reduce the antibodies and hopefully the surgery can take place at a later date.

## Immunosuppressive medicines

You will be given anti-rejection medication 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 undergo kidney transplantation will need to take anti-rejection medication for the rest of the time that the kidney is working. You can read more about these medications in our booklet, **Your guide to kidney transplantation**. If you have not already been given a copy, please ask us for one.

Patients who are incompatible with their donor usually require a higher dose of anti-rejection medication than those undergoing a routine transplant. These usually include tacrolimus and mycophenolate, which you will be asked to start taking 2-7 days before your transplant, depending on your degree of incompatibility. This is to make sure that there is an adequate level of the anti-rejection drug in your blood at the time of surgery.

You will also be given some additional medicines prior to the transplant that will further help to reduce the risk of rejection. These may include:

- rituximab
- basiliximab

Rituximab is a therapy that blocks part of your immune system and reduces the cells that make antibodies. It is given as a one-off intravenous infusion (through a vein) 2-4 weeks before the scheduled surgery, and is used for blood group incompatible transplantation. We will carry out a final cross-match against your donor before the administration of rituximab

The use of rituximab in transplantation is unlicensed. This means that, although it has been used in transplantation for many years, the manufacturer's licence for the product is for a different condition or range of conditions. More information on the use of unlicensed medicines can be found in our leaflet, **Unlicensed medicines: A guide for patients**. If you have not already been given a copy, please ask us for one.

Basiliximab, inhibit the cells of your immune system that are involved in rejection. It is given by intravenous infusion on the day of your transplant and on the fourth day following surgery.

All patients are different and we strongly advise that you discuss your situation carefully with your medical and nursing teams to ensure that you understand the implications for you personally.

## Contact us

Please contact us if you have further queries:

Prof Nizam Mamode, consultant transplant surgeon, **t:** 020 7188 1543

Lisa Silas, advanced nurse practitioner – living donation, **t:** 020 7188 5688

Irmen Generalao, clinical nurse specialist – antibody removal, **t:** 020 7188 9276

Out of hours, please contact, **t:** 07917 084532.

For more information leaflets on conditions, procedures, treatments and services offered at our hospitals, please visit **w:** [www.guysandstthomas.nhs.uk/leaflets](http://www.guysandstthomas.nhs.uk/leaflets)

## Pharmacy Medicines Helpline

If you have any questions or concerns about your medicines, please speak to the staff caring for you or call our helpline. **t:** 020 7188 8748, Monday to Friday, 9am-5pm

## Your comments and concerns

For advice, support or to raise a concern, contact our Patient Advice and Liaison Service (PALS). To make a complaint, contact the complaints department.

**t:** 020 7188 8801 (PALS)      **e:** [pals@gstt.nhs.uk](mailto:pals@gstt.nhs.uk)

**t:** 020 7188 3514 (complaints)      **e:** [complaints2@gstt.nhs.uk](mailto:complaints2@gstt.nhs.uk)

## Language and accessible support services

If you need an interpreter or information about your care in a different language or format, please get in touch. **t:** 020 7188 8815      **e:** [languagesupport@gstt.nhs.uk](mailto:languagesupport@gstt.nhs.uk)

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