

ABO-Incompatible Kidney Transplantation

Patient Information Leaflet

This leaflet is for recipients considering ABO-incompatible transplantation as well as their donors. It explains the procedure and what it involves. It also explains any associated risks.

What is the current situation?

Patients having kidney transplant operations at St George's Hospital come from the South West Thames Renal Transplant Network. This includes the Renal Units at St George's, St Helier and Royal Sussex County Hospitals.

We perform about 90 kidney transplants at St George's Hospital each year. All of these patients (recipients) receive a kidney from a patient with a matching blood group. These are known as **ABO-compatible** transplants. About half of these kidneys come from live donors. The rest are from donors who have died (deceased or cadaveric donors).

Approximately 98% of patients who have a transplant from a living donor are alive one year later. Also 98% of recipients have a working transplant one year after their operation.

What does ABO-incompatible mean?

There are red and white cells in our blood. The red cells have little building blocks on their surface that determine our **blood group**. These are called proteins. The main proteins are A or B. Individuals have either:

- one (blood group A or B),
- both (blood group AB), or
- none (blood group O) of these types of protein on the cell surface.

Donors and recipients may have identical, compatible or incompatible blood groups. The last group is known as **ABO-incompatible**.

In your body you have **antibodies**. These are very small substances produced usually in response infection. They are very good in getting rid of infection. Some antibodies though, may be harmful as in the case of ABO-incompatible transplantation. This is because you may have antibodies against:

- A
- or B
- or both A and B proteins.

These proteins are also found on the kidney. If an ABO-incompatible kidney were transplanted without safety measures, the recipient's antibodies would try to get rid of it. The antibodies would then harm the donated kidney. This is known as rejection. This is why we are developing special treatments for ABO-incompatible transplants.

How can we help ABO-incompatible donors and recipients?

About 30% of live donors are ABO-incompatible with their potential recipient. We have two main solutions to this problem.

- First, we have a **paired kidney exchange** or **paired donation** scheme. Here we try to match two pairs of donors and recipients that have compatible blood types. We then exchange kidneys between these two matched pairs. These may not know each other and be in different parts of the country.
- Second, we are introducing a system for transplanting kidneys between ABO-incompatible donors and recipients. This is known as **ABO-incompatible transplantation**.

So, we will now be able to use kidneys from ABO-incompatible donors either directly, or through a paired kidney exchange scheme.

What method of ABO-incompatible transplantation will we use?

After looking at all the evidence, we have decided to use a method used in Sweden. It is very successful for ABO-incompatible transplants. It is one of those recommended by the British Transplantation Society. We have chosen it for the following reasons:

- It allows us to target and remove those antibodies which may cause problems for the recipient. We do not need to remove those antibodies which might be helpful to the recipient in getting rid of infection. This

reduces the risk of complications compared with other techniques.

- We can avoid removing substances that help with blood clotting. This means that the risk of bleeding is reduced.
- Around 90 out of 100 blood group incompatible transplants will be working at the end of a year.

What does the process involve?

One month before transplantation, a special antibody called **rituximab** is given to you (recipient). This reduces the number of a particular type of white cell in your blood. This white cell would otherwise evolve to produce other antibodies which can harm your new kidney. The injection is given slowly as a drip, usually into a needle in a vein in the arm. We give this to you on Buckland Ward at St George's Hospital. It takes approximately four hours. We monitor you for side effects such as:

- allergic reaction
- flu-like symptoms
- low blood pressure
- nausea
- vomiting

The week before transplantation you will have three or four sessions of **immunoabsorption**. This is a process like dialysis that removes antibodies against A or B proteins from blood. Immunoabsorption sessions are carried out in the Dialysis Units attached to Buckland Ward. Each treatment will last three to four hours. Access to your blood supply is needed for this. If you are not yet on dialysis you will require a special line to access your blood. This is inserted into the vein at the base of your neck using a local anaesthetic. This will be removed once the transplant has taken place and the course of treatments has finished. Complications associated with line insertion are not common, but may include:

- collapsed lung
- bleeding
- infection

You will have regular blood tests. These are to check your antibody level against the A or B proteins. The results of these tests will show whether further immunoabsorption treatments are needed. The transplant operation itself is the same as in blood group compatible cases.

After transplantation, you may need to have two or three further

immunoabsorption sessions. After about two weeks, the kidney becomes used to your body. Immunoabsorption is usually no longer required after this period.

This protocol has been reviewed and approved by Professor Tyden who pioneered the Swedish protocol.

What are the risks of ABO-incompatible transplantation?

All patients who have a transplant are given medication to reduce the strength of their immune system. This is known as **immunosuppression**. It decreases the chance of your kidney being rejected.

The main difference between ABO-compatible and ABO-incompatible transplantation is the increased risk of **rejection**. To deal with this, you will be given more powerful immunosuppression. This may result in an increased risk of **infection** or **cancer**, when compared with paired donation.

Rejection can usually be successfully treated with drugs. Further immunoabsorption sessions may also be needed. If rejection cannot be treated your kidney may not work, or may stop working. However, none of the transplants performed in Sweden failed because of rejection so far.

Occasionally the antibody level against blood group proteins is too high just before transplantation. In this case your operation will be postponed. Further immunoabsorption sessions will be carried out until the antibody level becomes low. It is rare that your transplant will have to be cancelled because of this issue.

Do you have any questions?

You will have the opportunity to discuss ABO-incompatible transplantation and paired donation with your:

- nephrologist
- transplant surgeon
- live donor transplant coordinator

If you have any further questions please do not hesitate to contact either:

- **Transplant Sisters at St George's Hospital,**
 - Helen Gregson
Lead Nurse Renal Transplantation
Telephone: 020 8725 1035 (direct line)
Bleep: 020 8672 1255 and ask for bleep number 6876
 - Rhia Ventura
Renal Transplant Coordinator
Telephone: 020 8725 0745 (direct line)
Bleep: 020 8672 1255 and ask for bleep number 7127

Patient/donor support organisations:

- **Transplant Support Network**
www.transplantsupportnetwork.org.uk
0800 027 4490/4491
- **National Kidney Federation**
www.kidney.org.uk
0845 601 0209

Further Patient/donor information:

- **UK Transplant**
www.uktransplant.org.uk
- **British Transplantation Society**
www.bts.org.uk

