

**5**



**Kidney  
transplants**

## 5.1 Kidney transplants

A kidney transplant is another treatment for kidney failure but it is also not a cure. A transplant offers a more active life, free from dialysis as well as food restrictions. However, the new kidney requires a lifetime of management and care.

*I was amazed the amount of people who seem to believe that after a transplant you no longer have kidney failure. WAYNE*

If you are medically suitable and well on dialysis, you may be suitable to receive a kidney transplant from a deceased or live organ donor. A donor is the person who gives a kidney and a recipient is the person who gets the kidney.

Not everyone can have a transplant. Sometimes other health problems make dialysis a better treatment. To have a transplant, you need to:

- Agree with the idea of transplantation
- Be in good health, apart from kidney failure
- Be willing to go through with the tests and operation
- Be willing to take medication for the rest of your life

## 5.2 Deceased organ donation

Most deceased donations are from people who die while on a ventilator in an intensive care unit and have decided to donate their organs after death. If it is unknown whether the deceased person has given consent, their family can make the decision about donation.

The waiting period for a deceased donor kidney depends on the number of people on the waitlist, the number of donated kidneys available each year, your blood and tissue type and the length of time you have been on the waiting list. If your health worsens while waiting for a kidney, you may be taken off the waiting list for a while until it improves. The transplant would have less chance of success and could even be life threatening if you are not well. Unfortunately there are more people waiting for a transplant than there are deceased kidney donations.

## 5.3 Transplant waiting list

The kidney transplant waiting list is not like a queue where you slowly work your way to the front. It is more like a lotto game where you hold a ticket stating your blood group and tissue type. Each time a deceased donor kidney becomes available a recipient is chosen with the best tissue match. There are no special favours and you cannot pay to go to the front of the queue.

Young children get priority in most states, particularly if dialysis is interfering with their growth and schooling. Most people agree that children should have priority and there are so few waiting that this policy has little influence on the average waiting time. Overseas visitors are ineligible for an Australian transplant; people on the transplant waiting list must be permanent Australian residents.

The long wait for a deceased donor kidney reflects the low number of kidneys available for transplantation. This can be frustrating and often depressing. It may seem unfair that one person will wait for many years while someone else will get a lucky break within months of starting dialysis. You can only congratulate them and hope that you will be next.

Even if your blood group and tissue type matches, the cross match test has to be negative. This means that your blood is less likely to attack the donor kidney cells. A positive cross match means that the kidney will reject automatically and the transplant would be unsuccessful. The monthly blood samples taken for the transplant list are held in the Blood Bank laboratory. This means a cross-match can be easily done as soon as a kidney becomes available.

If you have had a previous transplant or multiple blood transfusions, you may have developed tissue antibodies. These will increase the chance of a positive cross match and reduce the chance of finding a compatible kidney. You can ask your doctor about your transplant antibody levels and if they are affecting your chance of being offered a transplant.

When a suitable kidney becomes available for transplantation:

- 1 The donor coordinator consults the national list to decide which potential recipient will be most compatible.
- 2 If no suitable recipient is found in the state in which the kidney originates, then it is offered to the next most compatible recipient in another state.

If you are chosen to receive a transplant, the hospital will contact you. Make sure the hospital has your current fixed and mobile telephone numbers, as well as the numbers of people you may be contacted through. Sometimes people on the waiting list are issued with a pager to ensure the hospital can reach them easily. If you are given a pager, change the batteries regularly and keep it with you at all times. If you cannot be found and do not contact the hospital within a certain time, the kidney may be given to the next most compatible recipient.

The identity of the deceased donor is never revealed to the recipient but you are able to write anonymously to the family via the Donor Coordinator to communicate your thanks.

## **5.4 Live kidney donations**

Kidney organ donations can also come from live donors. Live donors are usually relatives such as parents, brothers, sisters or adult children. If blood group and tissue typing match, people unrelated to you such as your partner or friend may also donate a kidney. It was thought that success rates were better if live donors were close relatives but partner-to-partner donation has become quite common. These transplants usually do just as well as transplants from a family member.

### **Benefits of using a live donor**

The main benefit of using a live donor is in the timing.

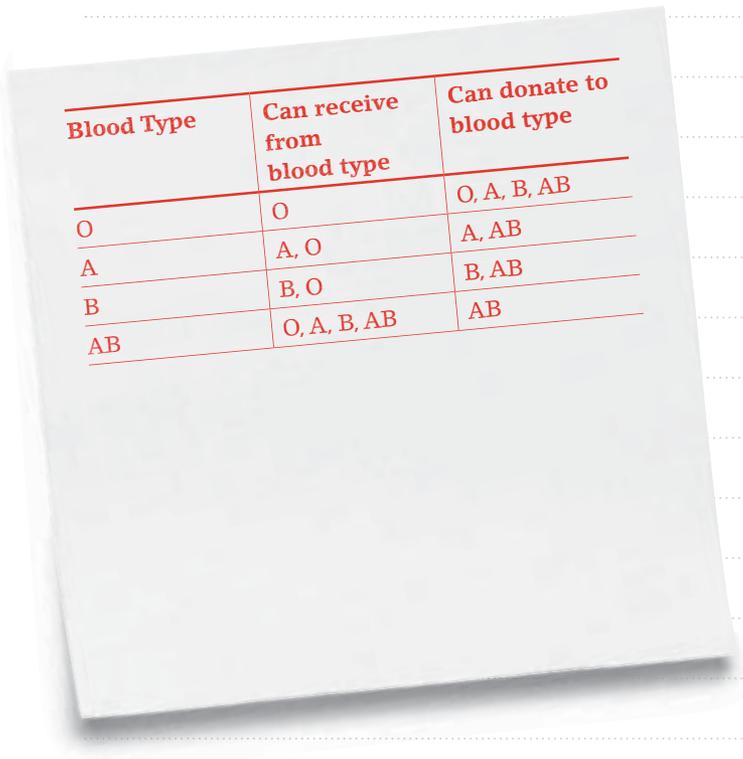
Live donation may mean you can have a transplant before you need to start dialysis or shortly after you start treatment. It also means that the time between a kidney's removal and transplantation is less so the success rate improves. Hospital admission and surgery can be planned ahead of time, allowing the donor and recipient plenty of time to prepare for the surgery and recovery. The surgery and pre-surgical care are the same for deceased and live donations.

## 5.5 Live donor evaluations

Before being accepted, a potential donor has to undergo extensive testing. This process makes sure that someone is physically and mentally suitable for live donation. These steps include:

### **Blood group matching**

The first test used to determine organ compatibility or matching is a blood group test. This test compares your red blood cells to those of the live donor. Kidney donation matching is similar to blood donation matching so that you can only receive a kidney from a donor who could also give you blood. In general, if your blood types are not compatible, donation is ruled out. The table below shows how blood type matching is worked out.



<b>Blood Type</b>	<b>Can receive from blood type</b>	<b>Can donate to blood type</b>
O	O	O, A, B, AB
A	A, O	A, AB
B	B, O	B, AB
AB	O, A, B, AB	AB

However, sometimes blood can be specially treated to allow recipients to get a kidney from a living donor who has an incompatible or non-matching blood group. To prevent immediate rejection of the kidney, the recipient undergoes plasmapheresis or a plasma exchange treatment before and after the transplant to remove harmful antibodies from the blood. Antibodies are part of the immune system. They are proteins produced by white blood cells to fight infections. This type of live kidney donation is being used on a limited basis in some Australian hospitals.

### **Medical testing**

Live donors need a thorough health check by a doctor, who is not part of the transplant team. Medical tests make sure that donating a kidney will not shorten the donor's life or change their quality of life. The transplantation team also has to decide whether the donor is fit for surgery and has a suitable kidney to donate.

Conditions such as cancer or diabetes, AIDS, hepatitis, major heart or breathing problems, very high blood pressure and certain other infections can prevent a person from donating.

Other tests to make sure that the live donor kidney is suitable may include:

- Tissue typing
- Serum cross-matching: mixing the donor and recipient blood types and observing the reaction
- Radiology tests
- Kidney function tests
- Viral screens
- Cardiovascular tests
- Psychological assessment

During these medical investigations, donors may find out that they have a health problem. They will receive support and referral to a specialist.

### **Informed Consent**

Donors must be fully aware of the risks to their own health. The transplant team helps the donor to weigh up the risks and/or benefits and understand the medical procedures. This is called informed consent. It also helps to make sure that the donor is:

- Comfortable with the idea of donation
- Is not being forced or paid for the donation
- Has a good understanding of the physical and emotional outcomes of kidney donation.

The donor can change their decision to donate at any time, right up to the time that the surgery takes place.

*I have two children. When they heard my kidneys were failing they both volunteered to donate one of theirs. My problem is – what if one of their children required that kidney later in life, due to disease or accident? CLIFF*

*At 63 years of age I was so fortunate to be in good health to be a suitable donor. Six years down the track, I am still walking 5.5 kilometres each day. MYRA*

*My brother became ill and I found it to be a 'no brainer' decision to be there for him. What I didn't expect was that it would open my eyes and make me feel the way I do. The look on my brother's kids' faces is worth its weight in gold, not to mention his wife or my Mum and Dad. All I can say is.. WOW.. what an amazing experience. PATRICK*

## **5.6 Donor recipient evaluations**

A medical evaluation is needed in preparation for a live donor transplant and before you can be placed on a deceased donor transplant waiting list. The evaluation may include:

- A physical examination
- Blood tests for tissue typing and matching with a suitable donor
- X-rays of your heart and lungs
- A surgical review
- Other tests and specialist consultations as determined by the transplant team

Once this transplant workup is complete and approval for transplantation is obtained, your name is forwarded to a central waiting list of transplant recipients kept by the Blood Bank in your state. There are ongoing monthly tests to make sure that you have not built up antibodies to foreign tissue.

Tissue typing information is kept on a central computer transplant list and donor kidneys are allocated to the recipients who have the closest tissue match. Other factors are also taken into consideration. Some people have rare tissue types for which it is difficult to find a match. Length of time on the waiting list is also taken into consideration.

To give your transplant the best chance of success,

## **5.7 Preparing for a transplant**

it is important that you look after yourself beforehand.

### **Maintain your dialysis schedule**

If you are on dialysis prior to a transplant, it is very important to follow your program.

### **Follow your recommended diet**

Carrying too much fluid before a transplant operation increases the chance of complications.

### **Maintain good blood pressure control**

Good blood pressure control is important for a successful transplant.

### **Stay fit**

Regular physical activity improves your fitness and can reduce recovery time and decrease your risk of developing complications such as diabetes.

### **Look after your teeth and gums**

Visit your dentist regularly as the risk of a mouth infection increases after transplant surgery if teeth and gums are in poor condition.

### **Protect your skin**

Protecting your skin from sun damage helps to prevent skin cancer after transplantation.

### **Maintain a healthy weight**

Being overweight increases the risk of complications from surgery. You can discuss a healthy lifestyle program with your health care team during your regular clinic visits.

### **Be a non-smoker**

Smoking harms the blood vessels in the kidneys, and the rest of the body. Smoking also increases your risk of heart attack, strokes and lung complications such as pneumonia after transplant surgery.

### **Have regular tests**

Provide your tissue typing and antibody blood tests each month to make sure that the information used for matching a kidney is current.

### **Have health care reviews**

Have regular reviews with your health care team and discuss any concerns about your transplant preparation.

### **Have health checks**

For women, monthly self-breast examinations are important as well as a Pap Smear test every two years.

## **5.8 Live donor transplant surgery**

### **Before surgery**

During the final week before surgery, the donor and the recipient are re-tested to make sure that they are fit and mentally ready. Another serum cross match test is done to double check that the first cross match was correct and that nothing has changed.

The day before surgery, the donor and recipient go to hospital. The recipient may have a dialysis session. As with other surgery, food and drink restrictions apply.

Medication is given before going to theatre and an intravenous line inserted into the arm so that extra medication can be given during surgery. In the operating theatre, an anaesthetic is given.

### **During surgery**

The surgery takes approximately two to three hours.

There are two types of surgery, open nephrectomy or keyhole.

The type of surgery affects the size of the cut that is made.

Open nephrectomy needs a cut along the bottom of your lower rib to a point just above your belly button. The cut will be on your left or right side depending on which kidney is being donated.

### **Open nephrectomy**

The surgeon makes a long cut on the side or front of the abdomen. The tubes connecting the kidney to the circulation and bladder are cut and clamped. The kidney is then removed and made ready for transplantation. The operation can take up to three hours.

### **Laparoscopic nephrectomy or keyhole surgery**

This type of surgery uses a smaller incision to remove the kidney. The surgeon uses a laparoscope to see inside the body to operate. A laparoscope is a thin tube with a video camera on the tip.

The kidney is checked then stored on ice while awaiting transplantation.

The same risks are present for live donation as with other types of major surgery including serious illness and death, which have been reported from time to time.

Complications, which can occur during or following these operations include:

- Punctured lung
- Lung infection
- Nerve damage
- Blood clots
- Bowel perforation (small tear)

### **After surgery**

The first few days can be painful so medication is provided. A live donor's hospital stay varies from three to ten days followed by up to six weeks recovery at home and one to two months with no heavy lifting. Keyhole surgery reduces the recovery time. Everyone's experience is different so it is important to talk about recovery with the health care team, family and friends. Live donors may experience depression after surgery.

Live donors are unlikely to develop kidney problems, particularly in the first few years. Removal of one kidney triggers the other to increase in function. The remaining kidney can provide up to 75 per cent of normal kidney function rather than the expected 50 per cent. Any decrease in overall kidney function is usually mild and life span is normal. However after several years, some donors may have slightly higher blood pressure. An annual check-up including a general health review, blood pressure measurement, a urine test for protein and a blood test for kidney function is advisable for all kidney donors, every year after donation.

## 5.9 Recipient transplant surgery

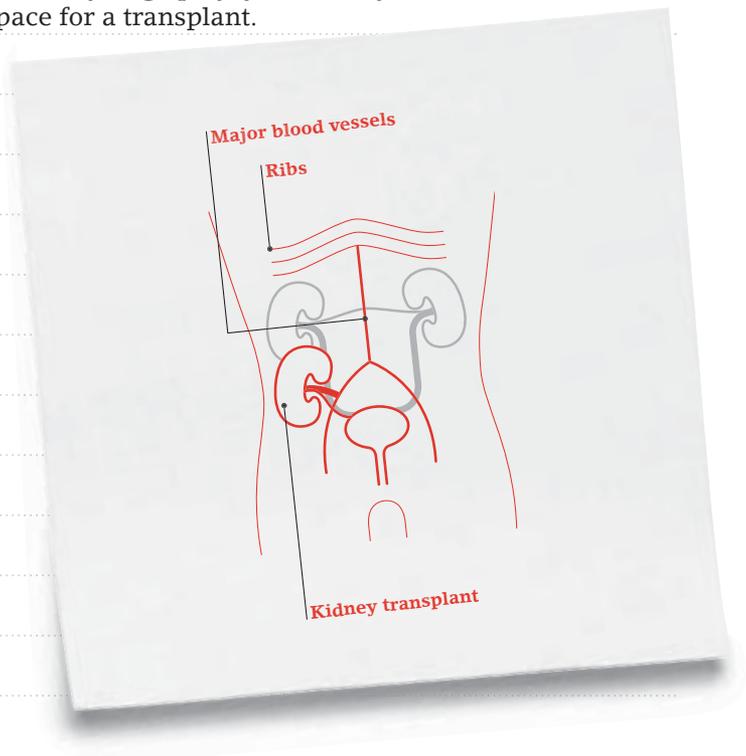
### Before surgery

After admission to hospital, you will have a physical examination and may need to give details of your medical history. It is useful to have your current and past medical details, including medications, in an easy to access file to take with you at short notice. A dialysis session may be required. Any active infections or other significant medical problems can cause cancellation of the operation. Immunosuppressant medications are given before and after surgery to suppress the immune system and stop your body from rejecting the new kidney.

Medication is given before going to theatre and an intravenous line inserted into your arm so that extra medication can be given during surgery.

### During surgery

During the operation, the donor kidney is placed in the recipient's body. Your kidneys are not usually removed unless they may be a source of infection. Sometimes if you have two very large polycystic kidneys, one is removed to allow space for a transplant.



The operation usually takes two to three hours with one to two hours in the recovery room. A cut is made in the lower part of your abdomen on the right or left side of the body. The donated kidney is placed in your pelvis, near the bladder. The renal artery and vein of the new kidney are connected to the main artery and vein in your pelvis. The ureter of the new kidney is connected to your bladder to allow urine to flow.

### **After surgery**

Many people begin to produce urine immediately after the new kidney has been transplanted. A catheter will be inserted into your bladder during the operation so any urine that is produced will pass through this into a collection bag. Others may need dialysis for a while until the new kidney begins to work. This does not mean that it will not work, just that it needs time to start. There is sometimes temporary damage to the kidney, which may take several days or even weeks to recover from. Daily blood tests are taken to check the function of your new kidney and detect early signs of rejection so it can be treated quickly.

It is important to do coughing, breathing and leg exercises while you are restricted to bed rest in order to:

- Minimise the risk of a chest infection.
- Reduce the chance of clots in the legs after surgery.
- Maintain clear air passages.
- Promote blood flow.

A physiotherapist assists you with your exercise plan. Most people sit out of bed after the first day and are able to walk within a couple of days.

Your length of time in hospital depends on how fit you are, how well the body responds to the new kidney and whether there are complications. Most people are in hospital three to ten days. Some people feel better immediately after their surgery while others take longer to adjust. You may need to return to hospital for a brief time if you have problems.

It is not advisable to do any heavy lifting for six weeks or drive until two to four weeks after a transplant. This will allow you to heal and your abdomen to regain strength after the operation. Some medications can affect your judgment.

## **5.10 Rejection**

Each recipient responds differently to a transplant. Don't expect that everything will return to normal within a particular time. Allow your body time to recover at its own rate. You can assist your recovery by following your health care team's advice.

Caring for yourself after the transplant is very important. The first three months following the transplant is when your new kidney is the most unstable and at risk of rejection. You will have regular medical check-ups to monitor the function of your new kidney - daily at first, then weekly, and then monthly. Report any changes in your health to your health care team as soon as possible.

In the early months of your transplant, you may experience a number of rejections. However, rejection can take place at any time after your transplant so it is very important that you follow any medical instructions.

### **Short term**

Acute or short-term rejection comes on quickly and needs immediate action. Rejection is very common in the first year after a transplant but can happen afterwards if you take your medications incorrectly. Acute rejection sometimes causes pain and fever but often has no symptoms. Treatment for rejection can involve a kidney biopsy to identify the cause and an increase or change in your medication.

### **Chronic rejection**

Chronic or slow onset rejection can occur more than a year after your transplant. It may not have any obvious signs because the kidney is gradually losing its function. Mild chronic rejection can be a problem and takes a longer time to progress. More severe rejection will eventually lead to kidney failure.

If your transplant fails because of rejection or for any other reason, you will have to go back on dialysis.

## **5.11 Anti-rejection medication**

After a transplant, anti-rejection or immunosuppressive drugs are needed for the rest of your life to prevent rejection. These drugs partly block the activity of your body's immune system, preventing it from attacking the transplanted kidney.

It is important to talk to your doctor or pharmacist about your transplant medications to get advice about:

- How long to take them
- When to take them
- How to take your medication
- Missed doses
- Possible dietary restrictions
- Interactions with other medications
- Side effects
- Storage and care of medications

### **Types of medication**

There are many types of anti-rejection drugs and they often have two names – the proper generic or chemical name and the trade name given by the pharmacy company. The generic and trade names of drugs used to prevent rejection include:

- Prednisolone – Solone<sup>®</sup> or Panafcortelone<sup>®</sup>
- Azathioprine – Imuran<sup>®</sup>
- Cyclosporin – Neoral<sup>®</sup> or Cy-A<sup>®</sup>
- Mycophenolate Mofetil – Cellcept<sup>®</sup>
- Mycophenolate Sodium – Myfortic<sup>®</sup>
- Tacrolimus – FK506<sup>®</sup> or Prograf<sup>®</sup>
- Sirolimus – Rapamune<sup>®</sup>
- Dacluzimab – Zenepax<sup>®</sup>
- Basiliximab – Simulect<sup>®</sup>
- Antithymocyte globulin (ATG) – Atgam<sup>®</sup>
- Everolimus – Certican<sup>®</sup>
- Muromonab – Orthoclone OKT3<sup>™</sup>

New drugs to prevent rejection are regularly trialled in transplant clinics. You may be asked to participate in a clinical trial of a new drug or you may be given other new drugs, which are not on this list.

These drugs are given in various combinations and doses to increase their effectiveness and reduce side effects. Each of these drugs has benefits and risks. The combination you are prescribed will be carefully selected to give your transplant the best chance of success.

### **Medication side effects**

Anti-rejection medications have a large number of possible side effects because the body's immune defences are suppressed. Fortunately, these side effects usually are manageable and related to dosage. If side effects do occur, changing the dose or type of the medications will usually take care of them.

Some of the most common side effects include high blood pressure, weight gain, diabetes and a greater risk of infections and tumours (particularly skin cancer). You may also require additional medications to maintain blood pressure and prevent ulcers and infections.

You may experience all or some side effects from these drugs because each person reacts differently. Side effects can include:

- Puffiness and rounding of the face and abdomen
- Unwanted hair growth
- Mood swings
- Acne
- Muscle weakness
- Hand tremors
- Upset stomach
- Indigestion
- Diarrhoea
- Overgrowth of the gums and gum infections
- High blood sugar levels (if you have diabetes)
- High cholesterol levels
- Altered blood count (low white cells, low red cells, low platelets)
- Weakening of the bones (osteoporosis)

If you become concerned about any side effects, you should discuss them with your doctor or pharmacist. Do not stop taking your medication unless told to do so by your health care team.

If you need treatment from other health professionals such as dentists, advise them that you have had a kidney transplant. Consult your kidney specialist before taking any prescription or over-the-counter medication prescribed by another health professional. It may affect your anti-rejection medications.

## **5.12 Looking after yourself post transplant**

It is important to take good care of yourself following a transplant.

### **Follow a healthy eating plan**

Talk to a dietitian about a healthy eating plan as the medications can increase your appetite making it difficult to stay at a healthy weight.

### **Reduce your risk of infection**

In the early stages, drug doses are higher and your body's defences are lower so:

- Wash your hands before meals, after going to the toilet, gardening and playing with pets.
- Try to avoid close contact with pets or people who may have an infection.
- Have a yearly flu shot to help ward off common strains of the flu.

Always report an illness to your health care team. Call them immediately if you experience any of these symptoms or other symptoms your doctor tells you to watch for:

- Discharge of fluid, redness or warmth at the site of the operation
- Abdominal pain or diarrhoea
- Feeling unwell, e.g. vomiting, persistent coughing or a sore throat fever or chill
- Reduced urine output or trouble urinating
- Blood in the urine
- Sudden weight gain
- Pain over the transplanted kidney

### **Slip, slop and slap**

To reduce your risk of skin cancer, remember to 'slip, slop and slap' when you are in the sun. Women should be aware of the increased risk of breast and cancers of the reproductive tract. Having an annual breast cancer check and a visit to a gynaecologist are advisable.

It is important to be a non-smoker. Health problems caused by smoking increase after a transplant, particularly the risk of lung cancer, strokes and heart attacks. The function of the transplanted kidney and the chances of a long-term, successful transplant can also be reduced.

### **Emotional changes**

Having a transplant has a positive effect on most people's lives. However it is still a major, life-changing event causing a range of emotions before or after the operation. You may have mood swings and feel stressed or depressed as you adjust to the return to better health. You may also:

- Have to come to terms with having another person's organ inside you. Some people worry that they may develop the donor's personality but this is not possible.
- Have conflicting feelings about a deceased donor transplant. Relief and happiness at having a new kidney but upset because the donor's family and friends are experiencing loss.
- Be overwhelmed by feelings of being 'normal' again.
- Find that your relationships change as your family and friends adjust to the change in your lifestyle as you become more active.
- Experience a 'roller-coaster' of emotions about the possibility of rejection. You may feel anxious about attending medical appointments and then relief after being told that the kidney is doing fine.
- Be overwhelmed at the thought of taking so many medications with their possible side effects.
- Feel guilty about your transplant because there are others in your renal unit still on dialysis.

People deal with a transplant in different ways. Your emotions affect your health so it is important to talk about your thoughts and feelings with your family, friends and health care team. Try not to think or worry about things that may never happen.

### **KEY POINTS**

- A kidney transplant is not a cure but another type of treatment for kidney failure.
- Kidney transplants can come from live or deceased donors.
- The surgery for live and deceased donations is the same. However live donations can be planned.
- There are two types of surgery for live kidney donors, open nephrectomy and keyhole.
- To prevent rejection your transplanted kidney needs a lifetime of care including medication.