What I tell my patients about kidney transplantation

Kidney transplantation is a successful long-term treatment for kidney failure. It offers greater freedom and improved health benefits compared with the other forms of treatment for kidney failure, which involve dialysis.

What is the kidney?

Most people have two kidneys, which are bean-shaped and situated above the waistline at the back of the abdomen (Figure 1). They are about 10–12 cm in length. The main function of the kidneys is to make urine, but they also have other important jobs, including the excretion of harmful waste products that would otherwise build up in the blood. They also control blood pressure, production of blood cells by the bone marrow, the levels of water and salt in the body, and the level of calcium in the bones.

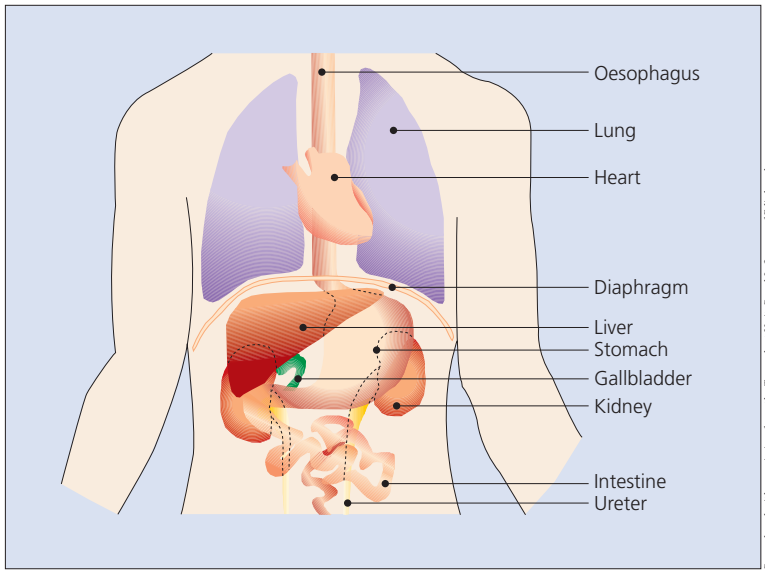

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Figure 1. Where is the kidney?

What happens when the kidneys fail?

There are many causes of renal failure but the outcome is usually the same. Renal failure is due to progressive disease of both kidneys, and it is often permanent. As kidney function deteriorates, you may experience the following symptoms: tiredness, swelling (often in the feet), breathlessness, anaemia, loss of appetite, nausea, itching, loss of libido, impotence, reduced fertility and depression, anxiety or frustration.

What are the benefits and risks of kidney transplantation?

Kidney failure must be treated to clear waste products from the blood. This often involves dialysis, but an alternative is to replace the lost function of the kidneys by transplanting a new kidney. Kidney transplantation offers the chance to return to a near-normal life with freedom from dialysis, and an improved chance to socialise and enjoy life to the full. Other benefits are a return in strength and energy levels, as well as freedom from dietary and fluid restrictions.

The disadvantages of kidney transplantation are that an operation is required (surgery always carries some risks), and there is the possibility that the transplant may fail (which is discussed in more detail later). There is a small, lifelong increased risk of infection, cancer and diabetes after a transplant, because of the drugs that you need to take to prevent the body from rejecting the transplanted kidney.

Is kidney transplant the best option for everyone with renal failure?

No, only about half of patients with kidney failure are on the active transplant list. You will be assessed to see if transplantation is the best option for you. Reasons why kidney transplantation may not be the best option include a recent history of cancer; major surgery; and serious heart, lung or blood-vessel disease.

In addition, some people choose not to have a kidney transplant and we respect their wishes.

How do I get onto the waiting list?

You will be able to discuss this with your nephrologist, who will then refer you to see a transplant surgeon. This assessment is necessary to decide whether transplantation is the best option for you and to identify any medical problems that may need to be corrected before transplant. This visit will also provide you with an opportunity to learn more about transplantation, to meet the key staff who will be involved in your care, and to visit the transplant unit. You will also be able to voice any concerns or ask questions. We recommend that you bring a friend or relative with you. Assuming that everything is satisfactory, your name will be placed on local and national waiting lists.

What should I do while waiting for my transplant?

Try not to restrict your lifestyle but keep yourself as fit and healthy as you can. It is especially

Stephen J Wigmore BSc MD FRCSED Consultant Transplant Surgeon
John LR Forsythe MD FRCS Consultant Transplant Surgeon
Transplant Unit
Royal Infirmary of Edinburgh
Edinburgh

important to follow any dietary advice and to stop smoking. Keep to your fluid restriction and take any medicines prescribed by your doctor. You may be provided with a pager so that the transplant unit can contact you if you are out when an organ becomes available. If you are going to be away from home for a while, or on holiday, it is important that you inform the transplant unit. Similarly, if you change your address or telephone number, please let the transplant co-ordinator know.

Where do donor kidneys come from?

There are two sources of kidneys for transplant. The first is from a person who has died and donated their organs for transplantation. These donors have suffered brain death as a result of an injury or brain haemorrhage, but were otherwise healthy. The other source is from a healthy, live donor (usually a relative or close friend) who agrees to donate one of their two healthy kidneys.

To protect the privacy of the donor family, it is not possible to give specific details about the donor or the circumstances of their death. After their transplant, some recipients find it helpful to write a letter of thanks to the family of the donor. If you wish to do this it can be arranged through the transplant co-ordinator.

How are organs allocated and how long will I have to wait for a kidney?

Kidneys are allocated through a nationally agreed scheme, which is designed to match kidneys to the best possible recipient on the basis of blood group and tissue type. This has been shown to improve the long-term results of transplantation. If two or more individuals are equally matched, a scoring system comes into operation, which takes into account factors like the age of the donor and recipient, length of time on the waiting list, closeness of kidney match, antibody levels in the recipient and local donor numbers.

It is difficult to predict how long you will have to wait for a transplant as it depends on a number of factors, including your blood group. Currently, the average waiting time in the UK is two years and six months. This figure is an average, which means that some patients will wait substantially longer, and some shorter, than this time.

There is a nationally agreed practice of giving children with kidney failure priority for transplantation and, as a consequence, the average waiting time for children is much shorter than for adults.

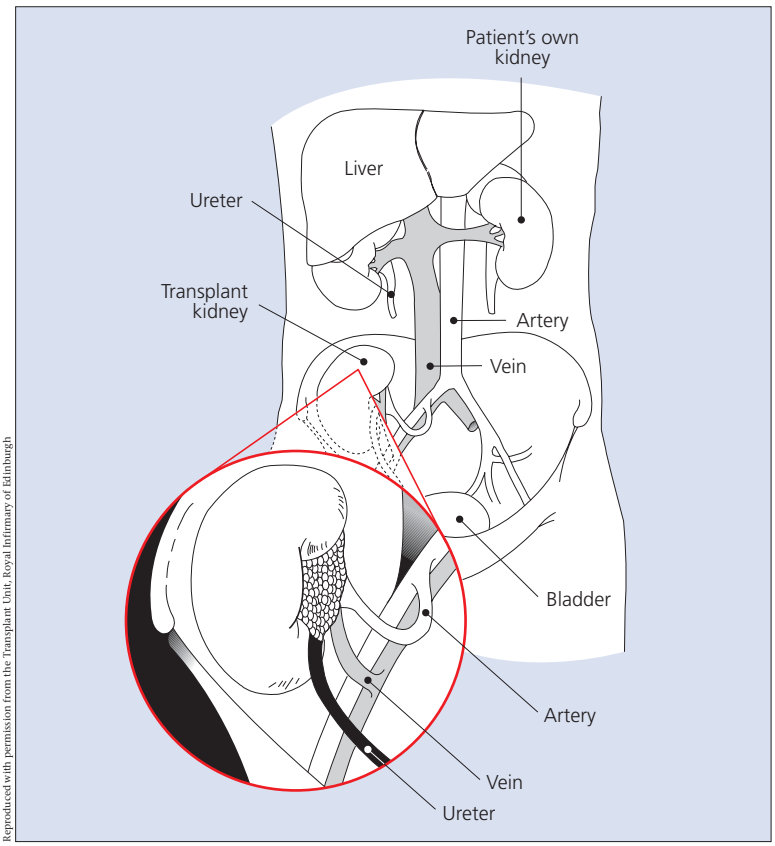

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Figure 2. The kidney transplant operation showing the position of the new kidney

What should I do when I am called for my transplant operation?

Consider how you will get to the hospital and who is going to look after your children or pets. Bring a bag with nightclothes and wash things. Lock your house (remembering to turn off any appliances) and tell a neighbour or relative where you are going. You may not have seen a doctor recently and it is important to tell the transplant unit if you are unwell. You should bring your normal medicines to the hospital, and you may be asked to bring your dialysis equipment with you. At the hospital, you will be seen by a doctor who will examine you to make sure that you are fit and healthy to undergo the operation. You may require dialysis before your operation and we will do a final crossmatch blood test to ensure that the donor kidney is compatible with your system. The surgeon will examine the kidney to make sure that it is suitable for you.

What does the operation involve?

The surgeon will make a curved cut in your lower abdomen and expose the bladder and side wall of the pelvis. The artery and vein of the new kidney are joined to the artery and vein of your leg, as this puts the kidney into a convenient position which allows the ureter (the tube carrying urine from your new kidney) to be joined to your bladder (Figure 2). This junction to the bladder is prone to leaks or narrowing and is often protected by a small plastic tube called a stent.

During the operation, you will be given the first of the drugs to prevent your body from rejecting the kidney. A kidney transplant operation does not require removal of your own non-functioning kidneys and these are left alone unless there is a specific reason to do otherwise.

A patient undergoing dialysis. Techniques for dialysis are improving, so that the health of patients awaiting a kidney transplant is also improving

The same patient after a kidney transplant. Transplantation offers the chance to return to a near-normal life with freedom from dialysis and a chance to socialise and enjoy life to the full

You will have a tube called a catheter placed in your bladder, which allows accurate measurement of the amount of urine produced by the kidney. This will be removed five to seven days after your operation. You may also have a 'drain' tube leading from the site of your operation to the skin, which allows any fluid or blood that collects at the operation site to drain out. Not all patients need a drain and if one is used, it will normally be removed one or two days after your operation. You will have a drip in a vein in your arm so that you can be given fluid and drugs, and another drip in a neck vein that allows us to measure your vein's blood pressure.

Will the kidney work immediately and how do you test if it is working?

After a transplant operation, the kidney will sometimes work immediately and this will be obvious by its increased production of urine and improvement in blood tests. Often, however, the kidney does not work initially as the transplant operation can cause it to 'go to sleep' for a period of days or weeks. During this period you may need to have dialysis. The kidney will almost always start working, and a delay in function alone should not be a cause for alarm.

In most hospitals or transplant units, the doctors routinely check that the blood supply to the kidney is working by means of a scan. If your kidney has not begun to function you may also need to have a biopsy of the transplanted kidney to make sure that there are no signs of rejection that need to be treated.

Most patients go home within ten days to two weeks of their transplant

What is rejection and will I get it?

Rejection is a normal reaction of your body to the kidney, which it recognises as foreign. Rejection is common and affects about 40% of patients after transplant. A biopsy (taking a small sample of tissue with a needle) of the transplant is needed to diagnose rejection and this is done under local anaesthetic under the guidance of a scanner. Rejection is usually mild and responds well to treatment with antirejection drugs. Left untreated it can cause permanent damage to the kidney and it is important that it should be treated. Nowadays, it is rare to have to remove a kidney because of rejection but it does still happen.

How soon can I go home after my transplant?

You will be able to drink fluids a few hours after your operation and, within a couple of days, you should be eating and drinking normally. You will be given advice about your diet on the ward and you should follow closely what the doctors tell you about how much to drink. The kidney is important for controlling the level of water in the body, but in the early stages after a kidney transplant this function may be lost. The kidney often produces too much fluid (urine) and so you may have to drink more than usual, and receive additional fluids though a drip. This will settle down and should not be a cause for concern. After your operation, the priorities are to make sure that the kidney is functioning well and that the levels of antirejection drugs are correct. This can take a variable period of time to sort out, but most patients go home within ten days to two weeks of their transplant.

How successful is transplantation?

There is an 88% chance of your kidney functioning adequately one year after transplant, and a

76% chance after five years. These figures are based on UK data for adults receiving their first kidney transplant. The patient survival figures are much higher than this, and some patients who have a failed transplant can go on to receive a second or third transplant.

What are the main complications?

- Delayed function. Not all kidneys work straight away, and you may require dialysis while waiting for the kidney to start functioning.
- Rejection. Your body will recognise the new kidney as foreign and will react against it. In many cases there will not be any outward signs that rejection has occurred; instead, it is detected from blood tests and confirmed by taking a needle biopsy of the kidney.
- Infection. The antirejection treatment that you must take following your transplant will make you more likely to develop infections. The risk is higher in the early stages after transplant, when the doses of the drugs are higher. If you think you might have an infection it is important that you contact the transplant unit quickly.
- Diabetes. Raised blood sugar can occur as a side-effect of the antirejection drugs. It is usually treatable by changes in medication or by diet, but occasionally people require insulin injections.
- Thrombosis. This is a rare complication that occurs when a blood clot develops in the vein or artery of the transplanted kidney. The lack of blood flow to the kidney usually means that the kidney will fail and will need to be removed in a further operation.
- Urine leak. Occasionally, the join between the kidney and the bladder fails, causing urine to leak out. Pain in the low abdomen is the most common symptom and it usually requires another operation to repair the leak.
- Bleeding. As with all major surgery, there is a risk of bleeding, which may require a blood transfusion or another operation to stop the bleeding.
- Deep vein thrombosis. Following all surgery there is a risk of developing blood clots in the veins of the legs. This problem is less common in patients with kidney disease, but it can still occur. To prevent this, you will be given injections of heparin under the skin for the first few days after the operation.

Key points

- **Kidney transplantation is a successful long-term treatment for kidney failure. It is associated with better quality of life than other forms of treatment, which involve dialysis.**
- **Not all transplanted kidneys function immediately. The kidney will almost always start working and a delay in function alone should not be cause for alarm.**
- **Rejection is common after kidney transplantation but normally responds well to treatment with antirejection drugs. It affects about 40% of patients.**

What is live kidney donation?

A live kidney donor is usually a family member, partner or close friend who is in good health. They must want to donate their kidney and they must be compatible in terms of blood group. The donor is carefully checked to ensure their kidney function is good so that removal of one kidney will not cause any problems. They must also undergo tests to make sure that their heart, lungs and blood vessels are in good condition and that they are not carrying an infection (such as HIV or hepatitis) that could be passed to the intended recipient. Long-term studies have shown that people who donate a kidney enjoy good health and a normal life span and the risk of developing kidney failure themselves is very small. There is a slightly increased risk of developing mildly raised blood pressure, but this can be easily treated if necessary. If you want to know more about this form of treatment, please ask any member of the transplant team, who can give you more information.

What is the future for kidney transplantation?

Efforts are under way to try to identify the causes of kidney disease in order to prevent patients from developing kidney failure. Techniques for dialysis are improving, which means that the health of patients awaiting a kidney transplant is also improving. The number of living donors coming forward has increased the overall number of patients with kidney failure who can receive transplants. We are also now able to successfully transplant kidneys from those who would have been considered less favourable donors several years ago. The goal of making the recipient's body more able to tolerate the transplanted kidney (and thus dispensing with the need for antirejection drugs) is still some way off. However, improvements in drugs mean that modern immunosuppression has fewer side-effects ■

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