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## Kidneys - dialysis and transplant

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### Summary

- Treatment options for kidney failure include dialysis, kidney transplantation or supportive care.
- There are two types of dialysis – peritoneal dialysis and haemodialysis.
- Dialysis can be performed at home, which is less disruptive to lifestyle and may have health benefits.
- Kidney transplant is a treatment for kidney failure, not a cure.
- Some people choose supportive care rather than dialysis or kidney transplantation.

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People with kidney failure need dialysis or a kidney transplant to stay alive. Together, the two treatments are known as kidney replacement therapy. Dialysis is temporary for some people with acute renal failure. They have this treatment until their kidneys begin to work again.

More often, kidney function worsens over a number of years (called chronic kidney disease) until there is less than 10 per cent function left. This condition is called end-stage kidney disease or kidney failure. This is when kidney replacement therapy is needed.

In 2014, close to 23,000 Australians were receiving dialysis or living with a kidney transplant to treat their kidney failure. The majority (over 12,000) of these treatments were dialysis. Over 2,600 Australian adults start kidney replacement therapy every year. The number of kidney transplants performed each year is continually increasing, but still fails to meet demand. The average wait for a kidney from a deceased donor is three and a half years.

Some people choose not to have either dialysis or a transplant, and have supportive care instead. It is estimated that half of the people who develop kidney failure are not treated with dialysis or transplant. The majority of these people are over 75 years old and most have other chronic conditions as well as kidney failure.

### Types of kidney dialysis

There are two forms of dialysis – peritoneal dialysis and haemodialysis. Peritoneal dialysis is further broken down into two main types: continuous ambulatory peritoneal dialysis (CAPD) and automated peritoneal dialysis (APD).

### Peritoneal dialysis

Peritoneal dialysis occurs inside your body using your body's peritoneal membrane as a filter. This membrane is a fine layer of tissue that lines your peritoneal (abdominal) cavity, covering organs such as your stomach, liver, spleen and intestines. It has a fine layer of tissues and a rich blood supply.

The two main types of peritoneal dialysis are:

- continuous ambulatory peritoneal dialysis (CAPD)
- automated peritoneal dialysis (APD).

### Access for peritoneal dialysis

Peritoneal dialysis uses a soft tube called a catheter. A surgical operation is required to insert the catheter into the peritoneal cavity. The catheter is about 0.5 cm wide and remains in your body until dialysis is no longer needed. One end of the catheter sticks a few centimetres out of your body, so that it can be connected to a bag containing a special fluid. The catheter allows the fluid to enter and leave your peritoneal cavity.

Waste and extra fluid move from your blood into the special fluid, which is then drained from the body. Each time

'used' fluid is replaced by fresh fluid, the cycle is called an 'exchange'. The number of exchanges needed differs from one person to the next.

### **Continuous ambulatory peritoneal dialysis (CAPD)**

Four exchanges are usually done each day. Each exchange includes connecting a new bag of fluid, draining out the old fluid and putting the new fluid in. It takes about 30 minutes and can be done almost anywhere, with a few sensible precautions. In between exchanges, the person is free to go about their daily activities.

Exchanges are typically done on waking, at lunch time, at dinner time and prior to going to bed. Some flexibility is available for busy days. CAPD works by gravity. When the drain bag is placed at floor level the fluid drains out. By raising the new dialysate bag above shoulder level, the new dialysate flows into the peritoneal cavity.

### **Automated peritoneal dialysis (APD)**

During APD, a machine called a cyclor does the exchanges. Each night, the catheter is attached to the tubing of the cyclor. It does several exchanges, moving the dialysate in and out of the body while the person is asleep. APD is done every night and usually takes between eight to 10 hours. During the day, dialysate is usually left in the body so that dialysis continues.

### **Training for peritoneal dialysis**

If a person chooses to have peritoneal dialysis, they will be taught to:

- perform the exchanges
- care for the site where the catheter leaves their body
- manage their general health
- manage any problems with dialysis
- order and look after dialysis supplies.

### **Haemodialysis**

Haemodialysis involves making a circuit where blood is pumped from your bloodstream to a machine that filters waste and excess water, and then the filtered blood is pumped back into your bloodstream. Only a small amount of blood is outside your body at any one time. The process is not painful and takes four to five hours.

### **Access for haemodialysis**

For haemodialysis to occur, access to your blood stream is needed. A 'vascular access' is made during surgery. Vascular is a term that means blood vessels and it can refer to both arteries (which take blood away from the heart) and veins (which take blood to the heart).

The surgery is usually done as a day case, so an overnight stay is not needed. It can take up to two months for the access to 'mature' so that it is ready to use for dialysis.

The three types of vascular access are:

- fistula – joins one of your arteries to a vein. The vein enlarges and is known as the fistula. It is usually in your lower or upper arm
- graft – uses of a piece of tubing attached between one of your arteries and a vein
- catheter – usually a temporary tube put into a large vein until a fistula or graft is ready to use. Catheters can be used immediately.

People with a vascular access need to take care of it and practice careful hygiene to prevent infection. It is important that you talk to your doctor and healthcare team about how to look after your graft or fistula, because it is your lifeline for treatment for kidney failure.

### **Treatment locations for haemodialysis**

Haemodialysis can be done by you at home, or for those people who need extra medical support, it can be performed at a dialysis unit in a hospital or a satellite centre. Your healthcare professionals will advise you of your available options. Haemodialysis is needed at least three times a week. At a dialysis unit, you will have permanent regular appointments for a four-to-five-hour dialysis session.

If you are dialysing at home, your schedule will be tailored to your needs and may include shorter or longer sessions, with three to six treatments each week. The extra treatments will help you to feel better.

If you choose to have haemodialysis at home, special plumbing will be installed and the machine will be provided, along with all the supplies you need. You will learn to manage your own dialysis. A spouse, friend, carer or partner can be trained to help you, but some people dialyse by themselves.

Having dialysis at home means you can choose to dialyse when it suits you – at any time during the day or overnight while asleep. At home, it is also possible to dialyse more often, which has health benefits.

### **Making a kidney dialysis choice**

The choice of dialysis treatment may be influenced by a number of factors including:

- personal lifestyle (including work, family responsibilities, travel, leisure activities)
- personal preference
- health and medical suitability.

If dialysis is needed, the pros and cons of the different options are discussed with the patient, their family, and their healthcare team. It is usually possible to change between dialysis options if one treatment no longer suits.

### **Kidney transplant**

A kidney transplant is a treatment for kidney failure, but it is not a cure. A transplant offers a more active life and freedom from dialysis, and from restrictions on fluid and dietary intake. It is important to remember that a transplanted kidney requires a lifetime of management and care.

Kidney transplants can come from living or deceased donors. The person receiving the kidney is called the recipient and the person giving the kidney is called the donor. Living donors can be relatives, as well as partners and close friends. Occasionally they are also people unknown to the recipient. Deceased donors are people who have decided to donate their organs after their death.

A transplant from a deceased donor is available to medically suitable people who have been stabilised on dialysis. If the transplant is from a living donor, the operation can be done when the kidneys are close to failing, but before dialysis starts. This is called a pre-emptive transplant.

The survival rate following a kidney transplant is high – 97 per cent of recipients from deceased donors are alive at one year, and 90 per cent are alive at five years. The survival rate following a kidney transplant from a living donor is even higher – 99 per cent at one year, and 96 per cent at five years.

### **Kidney transplant as an option**

Not everyone is suitable for a transplant. Sometimes, other medical problems make dialysis or supportive care better treatment options.

Factors that affect the suitability for a transplant include:

- agreement with the idea of transplantation and acceptance of risks involved
- general good physical health, apart from kidney failure
- willingness to go through with the tests and operation
- willingness to take lifelong anti-rejection medication.

### **Transplant procedure**

During transplantation surgery, the donated kidney is placed inside the recipient's pelvis and attached to their blood vessels and urinary tract. Their own kidneys are usually left in place. The operation takes up to three hours. After a successful transplant, the recipient no longer needs dialysis or special diets. If a transplanted kidney stops working, dialysis may be necessary again. Another transplant may also be possible.

To reduce the risk of problems such as transplant rejection, it is important that the blood and tissue of the donor and recipient match as closely as possible. Rejection is when the recipient's immune system attacks and tries to destroy the new kidney. Medication to control the recipient's immune system is needed for as long as the transplanted kidney functions, to reduce the risk of rejection.

### **Supportive care for kidney failure**

Supportive care is the treatment choice for kidney failure for people who have decided that the options of dialysis and transplant are not appropriate for them. For many, this is because they are already very frail and they do not want complex treatments. Some people have the complex treatment for a while and then wish to stop.

For many who are already frail, their lifespan with kidney failure, with or without dialysis, is very similar. Supportive care means that the person's care continues to be supervised and supported by health professionals. They may have medication and a restricted diet to improve their quality of life. Supportive care, however, will not artificially prolong life when your kidneys fail completely.

If a person is unsure about choosing a treatment option, it is always possible to try dialysis for a short while to see how things go.

### **Where to get help**

- Your doctor
- Your local community health centre
- **Kidney Health Australia Information Service**. Tel. 1800 454 363

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