



Produced by Dr. David Voss, Specialist Renal Physician  
in the interest of public health education.

[www.kidney.net.nz](http://www.kidney.net.nz)

## **End-Stage Kidney Failure Information Sheet**

### **What is end-stage kidney failure?**

The kidneys are important organs for the maintenance of a healthy human body. They clean the waste products from the blood. Many diseases can affect the kidneys. Some diseases are localised to the kidney, (e.g. glomerulonephritis) and some are systemic diseases affecting the kidney as well as other areas of the body (e.g. diabetes mellitus).

Whatever the damage, if the kidneys continue to be insulted with disease, the filters scar, and fail to clean the blood. As the damage to the kidneys progresses, more and more filters fail, until eventually not enough of the filters are working to keep the blood clean from the waste products and symptoms develop. Long before these symptoms develop, blood tests can detect the kidneys are not working adequately.

Unfortunately, there are no symptoms of kidney failure until the kidneys are severely affected by the disease process(es), and often severely damaged. Sometimes very ill people suddenly develop kidney failure – this is called acute kidney failure. In most cases the kidneys heal themselves, and little long term problems result.

Glomerulonephritides, diabetes mellitus, vasculitides (e.g. Wegener's granulomatosis, lupus nephritis), chronic long-standing high blood pressure, polycystic kidney disease and reflux nephropathy (flowing backwards up from the bladder to cause damage to the kidneys) are all common causes of progressive kidney failure.

Failure of the kidneys is fatal without life-supporting treatment of dialysis or kidney transplantation.

Polycystic kidney disease and reflux nephropathy (flowing backwards up from the bladder to cause damage to the kidneys) are inherited conditions.

### **What is dialysis?**

Dialysis, or renal dialysis, is the medical term for the artificial removal (cleansing) of the body's waste products in the blood that build up in kidney failure. There are two main types: haemodialysis ("machine dialysis") and peritoneal dialysis ("bag dialysis").

Both are effective and efficient at saving people from dying of end-stage kidney failure. Neither form of dialysis is as good as healthy functioning kidneys.

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The principle of dialysis is the movement (diffusion) of waste products from the blood into a special salt and water solution (dialysate), and so cleaning the blood of the waste products. The dialysate is like urine, a water based solution with the body's waste products within, and being removed from the body.

### What is haemodialysis?

In haemodialysis, a machine pumps the blood in a circuit from the body through an artificial kidney dialyser, which cleans the blood, and back into the body. As the blood goes through the artificial kidney the waste products move across the membrane within the artificial kidney. The waste products move from the blood, across the membrane, into the special salt and water solution (dialysate), which then goes to waste. The process of pumping blood through the dialyser is continual for several hours per session of haemodialysis.

Most people are on haemodialysis for 3 to 6 hours per session, three sessions per week. There are various modifications on this regimen, some dialysis units use longer hours (5 to 10 hours per session), and others use more sessions per week (5 to 6 sessions per week). There are various reasons for these variations, and not all options are suitable for everyone.

### What is peritoneal dialysis?

In peritoneal dialysis, the lining of the [abdomen cavity](#) (peritoneum) is used as the membrane (a natural membrane, and not an artificial one). Through a [tube \(catheter\)](#) surgically placed into the abdomen, the special salt solution is drained into the abdomen. After several hours, when the waste products have moved into the solution drained in (dialysate), the dialysate is drained out. This process is repeated several times per day.

Most people on continuous ambulatory peritoneal dialysis (CAPD) perform 4 to 5 bag exchanges per day evenly dispersed throughout the day, every day. Each exchange taking about 30 minutes. Some people are suitable for automated peritoneal dialysis (APD). The principle is the same, however, a [machine \(cycler\)](#) is programmed to drain the fluid out and in; rather than it being performed manually. Usually APD is more frequent smaller volume rapid cycling overnight, and one or no bag exchanges are required during the day.

### Can kidney failure be prevented?

Early detection of some kidney disease can allow early and successful treatment. Sometimes the treatment stops the progress of the kidney failure. Sometimes treatment slows down the progression of the kidney disease. Early detection of high blood pressure and good control of high blood pressure are important in all people with chronic kidney damage.

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Avoiding medications that are toxic to the kidney is paramount. Sometimes the medications must be given, where the benefits outweigh the risks; but sometimes there are less kidney toxic alternatives that can be used.

If you know you have kidney disease, it is important you tell your doctor, nurse or pharmacist before they prescribe or dispense you your medication.

Some “natural” products, homeopathies, alternative therapies, including Chinese medications, are not safe in chronic kidney disease. Some that are recommended for kidney disorders (e.g. St John’s Wort) are actually toxic to the kidney. Get medical advice on these therapies if you have kidney disease first. Some of the commonly recognised toxins to kidneys are listed [elsewhere](#).

David Voss

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