

## 17. What is kidney failure and what causes the kidneys to fail?

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As outlined in section 1, the kidneys perform a number of important functions, which include:

- > removal of waste products from the body
- > control of the amount of fluid in the body and its chemical composition
- > production of a number of hormones and chemicals.

**Kidney failure** occurs when the kidneys no longer function adequately to remove waste products and excess fluids from the body. Frequently, kidney failure is also associated with a lack of erythropoietin (which stimulates red blood cell production) and active vitamin D (1,25-dihydroxycholecalciferol) leading to anaemia and bone disease.

Other terms commonly used interchangeably to describe kidney failure include **chronic renal failure**, **uraemia** and **end-stage renal failure**.

Strictly speaking, **chronic renal failure** is any reduction in kidney function below normal levels, and this term describes a broad spectrum of disease from mild to severe kidney disease. **Uraemia** is said to be present when kidney function has deteriorated to such an extent as to be causing medical side effects. **End-stage renal failure** describes the point at which artificial renal replacement therapy (see also section 19) needs to be started in order to avoid the serious consequences of uraemia.

**End-stage renal failure** is said to be present when the kidneys are working at less than 10% of normal. In technical terms, this is described as a **creatinine clearance** of less than **10 ml/min**.

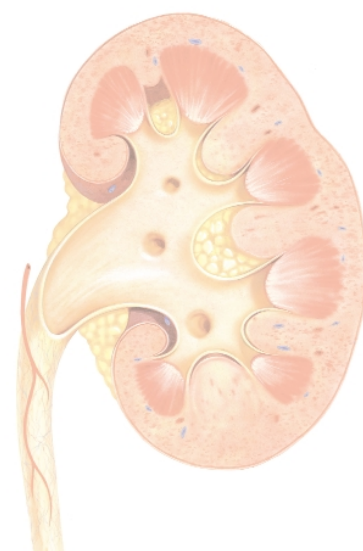
#### What happens when kidney failure occurs?

When kidney failure develops, waste products from the breakdown of foods that we eat and by-products from the cells of the body build up in the blood stream. If these are not removed, the entire body is affected. This results in loss of appetite, nausea, vomiting, tiredness, weakness, weight loss and often an abnormally high blood pressure. When **end-stage renal failure** develops, people may start to hiccup or even become confused or drowsy.

#### What causes the kidneys to fail?

There are many causes of kidney failure. The current causes in Australia are:

<b>Glomerulonephritis</b>	<b>32%</b>
Diabetes mellitus	22%
Hypertension	12%
Miscellaneous causes	10%
Polycystic kidney disease (PKD)	7%
Analgesic nephropathy	6%
Reflux nephropathy	4%
Uncertain cause	7%



## A GUIDE FOR PATIENTS

Medical intervention can slow the rate of progression of kidney failure and prevent the development of many of the symptoms that can result from renal failure. It can also delay or even perhaps prevent the need to start artificial kidney replacement therapy (dialysis).

### ***Kidney failure continued...***

Failure to eliminate excess fluid from the body results in a build-up of fluid in the blood stream, which ultimately leaks out into the tissues of the body. This commonly causes swelling of the ankles, known as **ankle oedema**. The fingers often swell, making it difficult to put on rings or take them off. If the build-up of fluid is particularly severe, fluid can leak into the lungs, causing shortness of breath particularly when the patient is lying flat.

The production of hormones by the kidney is also impaired. Lack of production of the hormone which helps produce red cells (erythropoietin), results in anaemia leading to tiredness and lack of energy. Reduced production of vitamin D by the kidneys affects the bones, causing loss of calcium and loss of strength.

### **Is treatment available for renal failure?**

Yes, treatment is available. Medical intervention can slow the rate of progression of kidney failure and prevent the development of many of the symptoms that can result from renal failure. It can also delay or even perhaps prevent the need to start artificial kidney replacement therapy (dialysis). Therefore, there are good reasons to have regular check-ups if kidney disease is present (see also section 18).

When kidney failure progresses to the point where the kidneys do not function well enough to keep a person healthy, replacement of kidney function with dialysis or a kidney transplant is necessary to maintain good health. Dialysis is used to replace some of the functions of the kidneys, particularly removal of waste products, substances toxic to the body and excess fluids.

Dialysis can be performed using an artificial kidney (haemodialysis machine), usually for 5 hours three times per week or by peritoneal dialysis (see also section 21).

Some patients become eligible to receive a kidney transplant if their general health is good enough. A successful kidney transplant can restore most of the functions of the kidney and return the patient to good health with a remarkably improved quality of life. When a kidney transplant is performed, a new kidney from a living or deceased donor replaces the patient's non-functioning kidney. Most patients require dialysis while awaiting a kidney transplant (see also section 22). Not all patients are suitable candidates for a kidney transplant, nor do all patients suitable for transplantation wish to be considered.

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