



what is dialysis?

What do the kidneys do?

The kidneys are bean-shaped organs, each about the size of a fist, in your lower back, one on either side of your spine. The kidneys are sophisticated machines which process almost 200 litres of blood on a daily basis to sift out about 2 litres of waste products and extra water. The wastes and extra water become urine, which flows to the bladder through tubes called ureters. The bladder stores urine until releasing it when one urinates.

Wastes in the blood come from the normal breakdown of active tissues, such as muscles, and from food. If the kidneys did not remove them, these wastes would build up in the blood and damage the body.

Why do kidneys fail?

Most kidney diseases attack the nephrons (tiny filtering units within the kidneys), causing them to lose their filtering capacity. Damage to the nephrons can happen quickly, often as the result of injury or poisoning. However most kidney diseases destroy the nephrons slowly and silently. Only after years or even decades will the damage become apparent. Most kidney diseases attack both kidneys simultaneously.

What is kidney or renal failure?

The word "renal" refers to the kidneys. If one or both kidneys fail completely and the damage cannot be reversed, the condition is called renal failure or end-stage renal disease (ESRD). When this occurs, your kidneys can no longer filter wastes well enough to keep you healthy. Treatments for kidney failure include dialysis and/or transplantation.

What are the signs and symptoms of kidney failure?

Kidney failure tends to happen gradually. Even if just one kidney works, or both partially, normal kidney function is still possible. It can be a very long time before any symptoms are noticed by the patient.

The following symptoms may be present:

- fatigue (tiredness);
- frequent need to urinate, especially at night (which grows with time);
- itchy skin;
- nausea;
- shortness of breath;
- erectile dysfunction (men have difficulty getting and/or sustaining an erection);
- water retention (swollen feet, hands, ankles);
- blood in the urine; and or
- protein in the urine.

What are the causes of kidney disease?

- Diabetes – responsible for 50% of renal failure cases.
- Hypertension (high blood pressure) – 25% of all renal failure cases.
- Kidney infection (pyelonephritis).
- Inflammation of the kidney (glomerulonephritis).
- Polycystic kidney disease (PKD) – inherited.
- Problems with kidney development in unborn babies.
- Jaundice.
- Systemic lupus erythematosus (SLE) – body's own immune system attacks the kidneys.
- Cardiac and vascular surgery.
- Physical injury – such as a heavy blow to the kidney.
- Long-term exposure to lead, solvents and fuels.
- Over consumption of some medications.
- Malaria.
- Yellow fever.

What is dialysis?

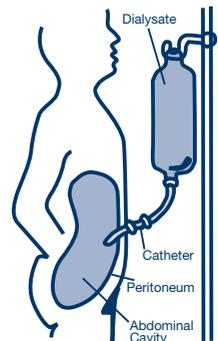
When the kidneys are no longer working effectively, waste products and fluid build up in the blood. Dialysis is a process of removing some of a person's blood, cleaning it, and then returning it to the person's body.

Dialysis treatments may be used for patients who have become ill and have acute renal failure (temporary loss of kidney function), or for fairly stable patients who have permanently lost kidney function (stage 5 chronic kidney disease).

There are two major types of dialysis:

- **Haemodialysis:** blood is run through an external filter and the clean blood is returned to the body. Haemodialysis is usually done at a chronic renal dialysis unit three times a week.
- **Peritoneal dialysis:** uses the lining of your abdominal cavity (the space in your body that holds organs like the stomach, intestines, and liver) to filter your blood. This kind of dialysis is needed daily hence the name of this treatment – continuous ambulatory peritoneal dialysis (CAPD).

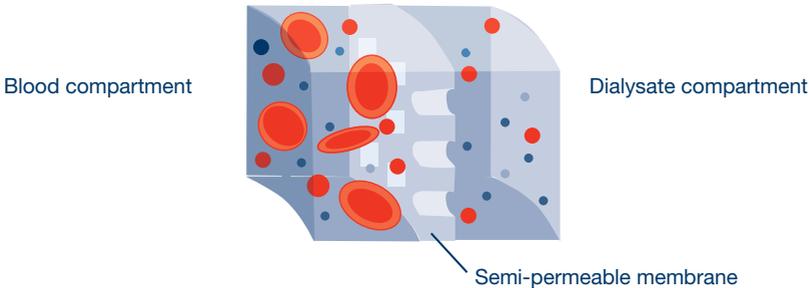
Peritoneal dialysis is not suited for all patients and criteria needs to be closely discussed together with your doctor.



How does dialysis work?

Blood travels through dialysis blood lines to the dialyser, also known as the artificial kidney. The dialyser is made up of two compartments, blood and dialysate. Porous membranes inside the dialyser allow for the movement of waste products, electrolytes and water between compartments through a process of osmosis and diffusion. These exchanges continue over the prescribed dialysis session until a balance of electrolytes and effective removal of waste products is achieved.

Red and white blood cells and other important blood components are too large to fit through the pores in the membranes, but urea and salt flow through membranes into the sterile solution (dialysate) and are removed. This is achieved by processes of osmosis and diffusion.



Is a renal diet important whilst undergoing dialysis treatments?

As kidney function declines, protein waste and minerals become more difficult for the kidney to remove. The main nutrients limited in kidney diets include protein, phosphorus, potassium and sodium.

Not only will a good diet help you feel healthy, it can also help you avoid complications such as fluid overload, high blood potassium, bone disease, and weight loss. Keeping close track of your diet can also help you control other diseases, such as diabetes and high blood pressure. Uncontrolled blood pressure and diabetes can worsen kidney disease and diminish any residual kidney function.

Useful websites

www.davita.com
www.nkdep.nih.gov
www.kidney.org
www.advancedrenaleducation.com