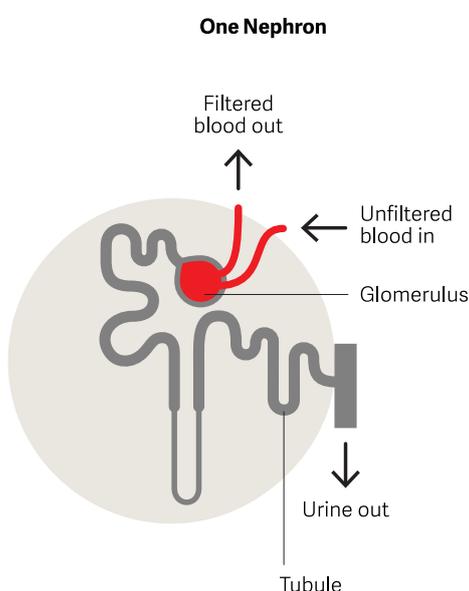


Fact sheet

Diabetic Kidney Disease

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Diabetes is a common cause of chronic kidney disease (CKD). Diabetes is caused by problems with the production and/or action of insulin. Insulin is a hormone that controls the amount of sugar in your blood.

Type 1 diabetes is an autoimmune disease that stops insulin being made in your pancreas. In Type 2 diabetes, your body cannot use insulin well.

Each kidney contains up to one million nephrons, which filter your blood. Diabetes can damage your nephrons, leading to diabetic kidney disease or diabetic nephropathy.

This is a serious disease, which can make other diabetic complications worse, including nerve and eye damage, as well as increase the risk of cardiovascular (heart) disease.

What are the symptoms of diabetic kidney disease?

Diabetic kidney disease often has no symptoms until it is well advanced. Some signs include:

- Increasing amounts of albumin (or protein) in your urine
- High blood pressure
- Reduced kidney filtration rate

The kidney filtration rate (glomerular filtration rate or GFR) does not usually fall until diabetic kidney disease is advanced. Once the GFR is reduced, it tends to fall at a steady rate unless the right treatment is given. See the *eGFR - Estimated Glomerular Filtration Rate* fact sheet for more information.

In some cases, diabetic kidney disease causes the kidney filters to become blocked and stop working, which leads to kidney failure.

Symptoms of diabetic **kidney disease** may also be general and include:

- changes in the amount and number of times you pass urine
- blood in your urine
- feeling tired
- not feeling hungry
- having trouble sleeping
- headaches
- lack of concentration
- shortness of breath
- nausea and vomiting

What are some complications of diabetic kidney disease?

If you have diabetic kidney disease, the other complications of diabetes can be made worse, including:

Cardiovascular disease - Includes all diseases of your heart and blood vessels. The most common diseases include heart attack, heart failure, stroke, and blocked blood vessels.

Retinopathy - This is damage to the blood vessels in your retina at the back of your eye. Retinopathy can cause loss of vision or blindness.

Neuropathy - This is damaged nerves and can cause weakness in your arms and legs or problems in organs, such as your digestive system heart and sexual organs.

What are my risk factors for diabetic kidney disease?

How long you have had diabetes - The longer you have diabetes, the more likely you will develop kidney damage. About 10 per cent of people with diabetes develop early signs of CKD in the first 10 years after being diagnosed. Between 20 and 30 per cent of people with diabetes will develop CKD by 20 years after being diagnosed.

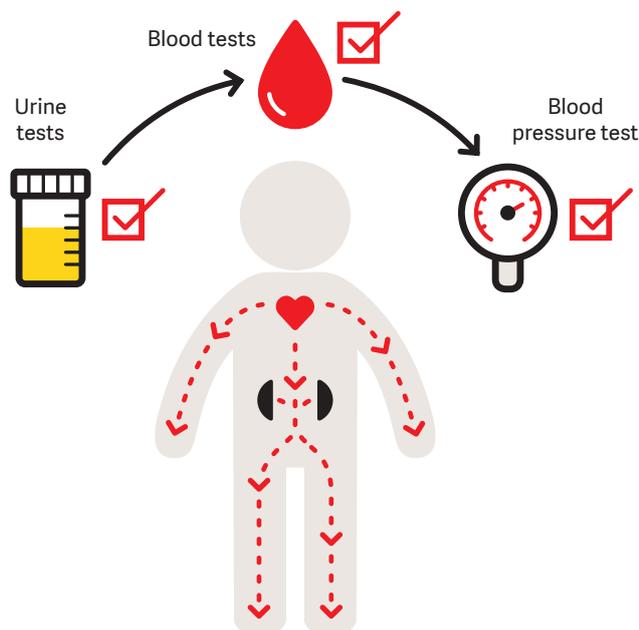
Family history - Some studies suggest that if you have diabetes, and a family history of high blood pressure or heart disease you are at greater risk of diabetic kidney disease.

Age - As you get older your kidneys' ability to filter blood will naturally reduce. Approximately 8 percent of kidney function is lost with each decade (ten years) of life.

Aboriginal and Torres Strait Islander heritage - If you are of Aboriginal and Torres Strait Islander heritage you are at increased risk of developing CKD. This may be due to an increased risk of diabetes and high blood pressure.

How can I lower my risk of diabetic kidney disease?

Have a Kidney Health Check every year - If you have diabetes, your doctor should give you a yearly Kidney Health Check, which includes:





Control your blood sugar levels

High blood sugar affects the small blood vessels in your kidneys, especially those in the kidney filters (nephrons). Controlling blood sugar levels can slow down diabetic kidney disease. Your doctor or diabetes health care team can help you.



Control protein in your urine (albuminuria)

Treatments to lower levels of protein in your urine can help to slow your risk of developing kidney failure. Your doctor might give you ACE inhibitors or ARBs (see above) to treat albuminuria.



Be a non-smoker

Smoking causes your arteries and veins to narrow, including the small vessels in your kidney filters, which means your kidneys can not work properly. If you smoke, call Quitline on 13 7848 or go to their website <http://www.quit.org.au/preparing-to-quit/getting-ready?gclid=CPCwkoKc-s8CFUccvAodrRICNg>



Maintain a healthy blood pressure

High blood pressure can cause kidney damage and kidney damage can cause higher blood pressure. High blood pressure can also lead to heart attacks, strokes and loss of sight if not treated. Your doctor might give you the medications such as angiotensin converting enzyme (ACE) inhibitor or an angiotensin receptor blocker (ARB) to help lower your blood pressure.



Control your cholesterol levels

Cholesterol is a type of fat or lipid. There are two types of cholesterol - low-density lipoprotein (LDL), or 'bad' cholesterol, and high-density lipoprotein (HDL), or 'good' cholesterol. Triglycerides are another type of stored body fat. Some studies have shown that high cholesterol level can speed up the rate of diabetic kidney disease. It is important to control your blood cholesterol and triglyceride levels with diet and medication if necessary. Speak to your doctor about your cholesterol levels.



Have a healthy lifestyle

Take the right steps by staying fit, maintaining a healthy weight, and doing things that help you to relax and reduce stress. See your doctor to have your risk factors checked. See a podiatrist to have your feet checked if you have nerve damage.



THINGS TO REMEMBER

- Diabetes is a common cause of CKD.
- Diabetic kidney disease can also lead to cardiovascular disease, loss of vision and nerve damage.
- To reduce your risk of diabetic kidney disease ask your doctor for a Kidney Health Check, control your blood pressure and cholesterol levels, be a non-smoker and live a healthy lifestyle.

What does that word mean?

Albumin - A protein in your blood.

Albuminuria - Occurs when albumin is present in the urine. There are filters in your kidneys that prevent large molecules, such as albumin, from passing through. If these filters are damaged, albumin passes from your blood into your urine.

Albumin:creatinine ratio (ACR) - This test compares the amount of albumin in the urine with the amount of creatinine. It is used to detect whether albuminuria is present.

Autoimmune - An autoimmune disorder occurs when your immune system mistakenly attacks your own body tissues.

Biopsy - A test where a small piece of tissue is removed for testing and examination under a microscope.

Blood pressure - The pressure of the blood in your arteries as it is pumped around your body by your heart.

Cholesterol - A naturally-occurring, waxy substance made by your body. It is an essential building block of cell membranes, hormones and vitamin D.

Chronic kidney disease - Progressive reduction in kidney function or kidney damage which is present for at least three months.

Diabetes - A chronic disease caused by problems with the production and/or action of insulin in the body which helps control blood sugar levels.

Diabetic nephropathy - A serious outcome of diabetes, which affects the kidney filters and can lead to kidney failure. Also called diabetic kidney disease.

eGFR - An estimation of glomerular filtration rate.

Glomerular filtration rate - The best measure of kidney function and helps to determine the stage of kidney disease. It shows how well the kidneys are cleaning the blood. GFR is reported in millilitres per minute. The GFR is usually worked out from the results of the creatinine blood test with age and gender.

Hypertension - High blood pressure. High blood pressure can cause chronic kidney disease and chronic kidney disease can cause high blood pressure.

Immune system - A collection of special cells and chemicals that fight infection-causing agents such as bacteria and viruses.

Insulin - A hormone made by your pancreas. Insulin moves glucose (sugar) from your bloodstream into your body cells which use it to give you energy. Diabetes means the body does not make insulin (Type 1) or does not make enough insulin, or the insulin it does make does not work well (Type 2).

Nephron - The tiny parts of the kidney that filter blood to make urine. There are over one million filters in each kidney.

Pancreas - An organ in your stomach that helps break down your food and makes insulin.

Protein - Substance obtained from food, which builds, repairs and maintains body tissues. It also helps to fight infections and heal wounds.

Proteinuria - The medical term for too much protein in your urine.

Urine - The name for excess fluid and waste products that are removed from the body by the kidneys. Commonly called wee.

For more information about kidney or urinary health, please contact our free call Kidney Health Information Service (KHIS) on 1800 454 363.

Or visit our website kidney.org.au to access free health literature.

This is intended as a general introduction to this topic and is not meant to substitute for your doctor's or Health Professional's advice. All care is taken to ensure that the information is relevant to the reader and applicable to each state in Australia. It should be noted that Kidney Health Australia recognises that each person's experience is individual and that variations do occur in treatment and management due to personal circumstances, the health professional and the state one lives in. Should you require further information always consult your doctor or health professional.



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For all types of services ask for 1800 454 363