

Fact sheet

Albuminuria

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What is albuminuria?

Albumin is a protein in your blood. In the blood, albumin acts as a carrier and helps to maintain blood volume and pressure. The action of the kidney is to filter the blood to remove waste products and these filters (known as glomeruli) prevent large molecules, such as albumin, from passing through. If these filters are damaged, albumin passes from the blood in to the urine.

If your kidneys are damaged and albumin leaks into the urine in very small or 'micro' amounts, this is called microalbuminuria. As kidney function declines the amount of albumin in the urine increases, and larger or 'macro' amounts of albumin may be present. This is known as macroalbuminuria.

The finding of albumin in the urine may be the first sign of an otherwise silent kidney condition.

What is proteinuria?

Albuminuria and proteinuria mean similar things. Albuminuria refers to abnormal levels of the protein called albumin in your urine. While albumin is the most common protein found in the urine, there are other proteins in the urine such as low molecular weight immunoglobulin, lysozyme, insulin and beta-2 microglobulin. Proteinuria refers to abnormal levels of all of the proteins in the urine, which may or may not include albumin.

What causes albuminuria?

Inflammation or swelling of the kidney filters is the most common cause of albuminuria. This condition is often called glomerulonephritis or nephritis. See the 'Nephritis' fact sheet for more information.

Diabetes and high blood pressure are the two main risk factors for albuminuria as they can damage your kidney filters. Older age, weight gain and certain family backgrounds can also increase the risk.

Cardiovascular disease is also linked with albuminuria. Damaged blood vessels may lead to heart failure or stroke as well as kidney failure. Some examples of temporary albuminuria that are often not a sign of significant kidney damage include:

- when it follows strenuous exercise
- when it only occurs with a fever
- when it occurs only during a urinary tract infection
- when it is absent in the morning but occurs later in the day, called orthostatic proteinuria

What is orthostatic proteinuria?

Sometimes older children have orthostatic proteinuria. It is unusual in people aged over 30. 'Orthostatic' means upright so protein is only lost into the urine when these children are standing up. Children with this kidney condition do not have kidney damage and for reasons that are not understood, only have proteinuria when they are active.

What are the symptoms of albuminuria?

In some cases there may be no signs or symptoms linked with this condition. One of the most common symptoms of albuminuria is foamy appearance or excessive frothing of the urine.

When a very high level of albuminuria is ongoing, it may cause the protein in your blood to drop. This drop allows fluid to move through the blood

vessel walls and causes swelling of soft tissue areas such as around the eyes and other body parts like the feet and hands.

The amount and type of protein in the urine reflects the change that has occurred to the kidney. A small amount of albuminuria that comes and goes is usually not significant but sometimes these low levels are

early signs of chronic kidney disease (CKD) that can worsen over time. Sometimes there is a large amount of protein present yet the underlying problem may be treatable. Ongoing albuminuria usually indicates the presence of serious, underlying kidney disease so albuminuria should always be investigated.

What tests detect albuminuria?

The preferred method for detecting albuminuria is a test called a urinary albumin:creatinine ratio (urine ACR). This test is performed on a single sample of your urine. Your doctor may ask you to collect a urine sample first thing in the morning, right after you get up (called a first void sample). If this is not practical, your doctor can still do the test on a sample of urine collected at any time during the day (called a spot random sample).

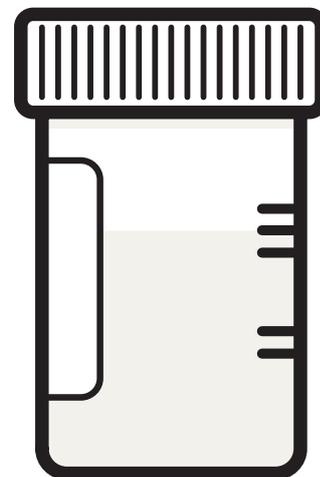
If this test result is positive, then your doctor will repeat the test two times within the next three months to see if you have persistent albuminuria.

A urine ACR test should be done at least once a year if you have diabetes or high blood pressure, and every two

years if you are obese, smoke, have cardiovascular disease, have a family history of CKD or are of Aboriginal or Torres Strait Islander origin.

Your doctor will also probably suggest you have a blood test to detect the possible causes for loss of protein.

If the doctor suspects that a child has orthostatic proteinuria, two urine samples are collected and checked. The first is collected in the morning, right after the child gets up (first void). The second sample is collected throughout the day. If it is orthostatic proteinuria, the first void sample won't have any protein but the daytime sample will have protein.



How is albuminuria treated?

Your doctor will monitor the level of albumin in the urine to find out if it is increasing or decreasing. Further tests may be needed to investigate the cause and extent of kidney damage. In some cases a kidney biopsy is the only way to accurately diagnose the cause of albuminuria. This is done by passing a needle through your skin into the kidney, and a small piece of kidney tissue is removed for examination under a microscope by a pathologist.

If the biopsy finds a treatable cause then the treatment may stop the albuminuria. However most types

of kidney disease cannot be cured but progression can be slowed by appropriate treatment.

In recent years the use of medications such as ACE inhibitors or angiotensin receptor blockers has proved to be effective treatment for reducing albuminuria. Reducing the amount of albuminuria means an improved outcome whatever the underlying cause. This treatment has become the standard approach in most cases.

If your albuminuria is due to diabetes or high blood pressure, the first goal will be better self-management of

diabetes and/or blood pressure. Your doctor may prescribe ACE inhibitors or angiotensin receptor blockers. These drugs have been found to protect kidney function while controlling blood pressure.

If your child has orthostatic proteinuria, usually no treatment is needed. The doctor will test your child's urine after a few months to check for the amount of protein. If the proteinuria hasn't changed or if there is more protein, your doctor may send your child to a kidney specialist.

How can albuminuria be prevented?

People at risk of developing CKD need to have regular check-ups with their doctor to detect and treat kidney disease before it worsens.

You are at increased risk of CKD if you:

- have high blood pressure
- have diabetes
- have established heart problems (heart failure or past heart attack) and/or had a stroke
- have a family history of kidney failure
- are obese (Body mass index ≥ 30)
- are a smoker
- are 60 years or older
- are of Aboriginal or Torres Strait Islander origin
- have had an episode of acute kidney injury

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.

Kidney Health Australia gratefully acknowledges the valuable contribution of the Royal College of Pathologists of Australasia for the review of this material.



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