

**Fact sheet**

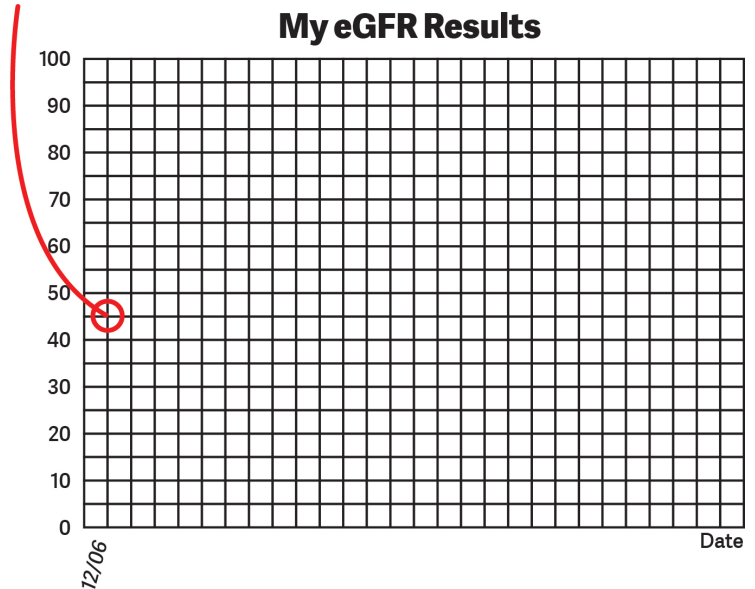


# Kidney Disease Tests and Procedures

People with kidney disease often undergo a lot of medical tests and procedures. These may be performed to confirm a diagnosis, determine a cause, monitor your progress or when planning for treatment. Some of the most commonly used tests for people with kidney disease are outlined in this fact sheet.

You may find it useful to buy a folder and keep records of your health appointments, test results, and procedure details. This will allow you to monitor and compare your results. You may also like to use some graph paper to plot your test results (see example).

**Example:  
eGFR 45**



## Tests for kidney function and damage

### Blood tests:

- **Estimated Glomerular Filtration Rate (eGFR)** - The best measure of your kidney function. It shows how well your kidneys are cleaning your blood. Your eGFR is usually estimated from the results of the creatinine blood test. eGFR is reported in millilitres per minute per 1.73m<sup>2</sup>(mL/min/1.73m<sup>2</sup>). An eGFR of 100 mL/min/1.73m<sup>2</sup> is in the normal range, so it is useful to say that 100 mL/min/1.73m<sup>2</sup> is equal to

‘100% kidney function’. An eGFR of 50 mL/min/1.73m<sup>2</sup> could be called ‘50% kidney function’.

- **Creatinine** - A waste product made by the muscles. It is usually removed from the blood by the kidneys and passes out in the urine. When your kidneys aren’t working well, creatinine stays in the blood. Creatinine varies with age, gender and body weight, so it’s not an accurate way of measuring

overall kidney function. When on dialysis, creatinine levels are always high.

- **Urea** - A waste product made as the body breaks down protein. High urea levels suggest decreased kidney function.

## Urine tests:

- **Albumin:Creatinine Ratio (ACR)** - Used to measure the amount of albumin (a kind of protein) that leaks into your urine when your kidneys are damaged. A small or 'micro' amount of albumin in the urine is called microalbuminuria, and a larger, 'macro', amount is called macroalbuminuria.
- **Urinalysis** - The examination of your urine sample to detect medical conditions like kidney and liver disease, diabetes and urinary tract infections. This can be a visual examination for colour and clearness. A chemically treated strip or dipstick is used to test for pH, sugar (glucose), blood, bacteria, or waste products. A urine sample can be sent to a laboratory for examination under a microscope or to grow a culture (sample test) if an infection is suspected.

## Tests for diabetes

- **Glucose** - Blood glucose monitoring is a measurement of glucose (sugar) in the blood. Values can vary depending on physical activity, meals and insulin (hormone) management. When you have diabetes your glucose levels are raised.
- **Glycosylated haemoglobin (HbA1c)** - A test that measures the amount of glycosylated haemoglobin in the blood. Glycosylated haemoglobin is a molecule in red blood cells that attaches to glucose. There are higher levels of glycosylated haemoglobin if you have more glucose in your blood.

## Tests for heart health

**Blood pressure:** The pressure of the blood in the arteries as it is pumped around your body by the heart. Blood pressure is recorded as two numbers, for example 140/90 mmHg. The higher number indicates the pressure in the arteries as the heart squeezes out blood during each beat. This is called the systolic blood pressure. The lower number indicates the pressure as the heart relaxes before the next beat. This is called the diastolic blood pressure.

### Blood tests:

- **Cholesterol** - A naturally-occurring, waxy substance made by the body. It is an essential building block of cell membranes, hormones and vitamin D. Too much cholesterol in the blood can cause clogging of the arteries leading to heart disease.
- **Low-density lipoprotein (LDL) cholesterol** - Known as the "bad" cholesterol. The higher the amount of LDL cholesterol, the higher the risk of heart disease.
- **High-density lipoprotein (HDL) cholesterol** - Known as the "good" cholesterol. The lower the amount of HDL cholesterol, the higher the risk of heart disease.
- **Triglycerides** - The most common type of fat stored in your body. A high level of triglycerides in your blood can increase your risk of heart disease.

## Tests for vitamin and mineral levels

- **Potassium (K)** - A mineral found in many foods. If your kidneys are healthy, they remove extra potassium from the blood. If your kidneys are damaged, the potassium level can rise and affect your heart. A low or high potassium level can cause an irregular heartbeat.
- **Sodium (salt, Na<sup>+</sup>)** - A substance which together with chloride makes up common salt. High levels of sodium can raise your blood pressure and may indicate dehydration.
- **Calcium (Ca)** - Needed for healthy bones and teeth. Most of the cells in the body need calcium to work properly. Raised calcium levels may cause headaches, nausea, sore eyes, aching teeth, itchy skin, mood changes and confusion.
- **Phosphate (PO<sub>4</sub>)** - A mineral which together with calcium keeps your bones strong and healthy. Too much phosphate causes itching and pain in the joints, such as the knees, elbows and ankles. When the kidneys are not functioning properly, high levels of phosphate build up in the blood.
- **Vitamin D** - A vitamin that is made in your skin after the exposure to the sun. The kidneys change (activate) Vitamin D so that your body can use it.

## Tests for anaemia

- **Haemoglobin (Hb)** - The oxygen-carrying part of red blood cells that gives them their red colour and transports oxygen around the body. Low haemoglobin levels indicate low red blood cell count.
- **Haematocrit (Hct)** - A measure of the percentage of blood made up of red blood cells. Low numbers of red blood cells leads to anaemia.
- **Transferrin saturation (TSAT)** - The percentage to determine your iron status. Low transferrin saturation percentage can suggest iron deficiency.
- **Vitamin Ferritin** - A protein that is measured to determine how much iron your body is storing. Low levels can lead to iron deficiency.

## Tests for hormones

- **Parathyroid hormone (PTH)** - Helps control calcium, phosphorus, and vitamin D levels within the blood and bone. Kidney failure can cause the parathyroid glands to produce too much PTH.

## Imaging tests

- **X-ray** - An examination used to create images of your internal organs and bones to help diagnose conditions or diseases.
- **Ultrasound** - An imaging procedure that uses sound waves to show the structure of your organs.
- **Computerised Tomography (CT) Scan or Magnetic Resonance Imaging (MRI)** - An imaging procedure that uses special x-ray equipment to create a series of detailed pictures or scans of your tissues and organs. You may be asked to drink a liquid containing a positive contrast material, or 'dye', which allows the radiologist to see the kidneys more clearly.
- **Kidney biopsy** - A procedure where a needle is passed through your skin into the kidney in order to remove a small piece of kidney tissue for examination under a microscope. Local anaesthetic is used, so it is a relatively painless procedure.
- **Fistulagram** - Used to check fistula function. A needle is placed in your fistula and dye is injected into your fistula to allow structure to show up on your x-ray.
- **Cystoscopy** - A test that uses a thin, flexible, tube-like telescope called a cystoscope to view the inside of the bladder and some parts of the kidney.
- **Radionuclide scan** - A small amount of radionuclide (a chemical which releases a type of radioactivity called gamma rays) is put into your body, usually by an injection. After a few hours, a special camera views the gamma rays and turns them into pictures. The pictures can show if your kidneys are damaged or scarred.

## Consent for medical tests

You need to give consent for any medical test. However, consent for a test can simply mean cooperating, e.g. holding out your arm for your blood pressure to be taken. This is called informal, inferred or implied consent.

If a test is invasive, carries a particular risk, or may have implications for therapy and management, then you may be asked to provide written informed consent before the test is performed. You will be provided with an information sheet outlining the details of the procedure and the risks involved. You will then be asked to sign a form confirming that you agree to the procedure being performed.

It is important that you take your time when reading the consent form. Make sure you understand all the words and descriptions, and don't hesitate to ask for more information if you need it or have any concerns. If English is not your first language and you are unsure about what you have been told, ask for an interpreter to be with you or discuss the tests with a doctor who speaks your first language.

See the *Make the most of your visit to the doctor fact sheet* for suggestions on how to prepare for visits with your healthcare team.



#### THINGS TO REMEMBER

- It is common to need a lot of tests if you have kidney disease. Tests are performed to confirm diagnosis, monitor your progress and help in the planning of your treatment.
- Keep a copy of your tests and procedures so that you can monitor and compare your results.
- You always need to give consent for any medical tests. Make sure you understand the test or procedure before providing written consent.

## What does that word mean?

**Haematuria** - Blood in your urine. It can turn urine a red or dark cola colour, which is visible to the eye OR may only be found by a urine test (microscopic haematuria). Blood in the urine is a common sign of urinary tract infections but can be the first sign of a problem with the kidneys or the bladder.

**Insulin** - A hormone made by our pancreas. Insulin moves glucose (sugar) from our bloodstream into our body cells which is then used as energy. Problems with the production and/or action of insulin causes diabetes.

**Local anaesthetic** - A medication that is used to briefly numb part of your body to perform a procedure.

**pH** - The concentration level of a solution. Used to determine if the solution is acidic or neutral.

**Radiologist** - A doctor who specialises in the study and interpretation of images using a range of medical imaging techniques.

For more information about kidney or urinary health, please contact our free call Kidney Helpline on 1800 454 363.

Or visit our website [kidney.org.au](http://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