People with kidney disease often undergo a lot of medical tests and procedures. They are needed to confirm a diagnosis, plan treatment or check progress. 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 procedures details. This way you can follow the developments of your tests yourself. You may also like to use some graph paper to plot your test results (see example).

**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 the blood. Your eGFR is usually estimated from the results of the creatinine blood test. eGFR is reported in millilitres per minute per 1.73m² (mL/min/1.73m²). An eGFR of 100 mL/min/1.73m² is in the normal range, so it is useful to say that 100 mL/min/1.73m² is equal to ‘100% kidney function’. An eGFR of 50 mL/min/1.73m² 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 the kidneys aren’t working well, creatinine stays in the blood. Creatinine varies with age, gender and body weight, so its level is 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** - An examination of a 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. For example, blood in the urine (haematuria) may make urine red or an infection can make it cloudy. 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 an examination under a microscope or to grow a culture 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 administration. Your glucose level is raised in diabetes.

- **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 against the walls of the arteries as the heart pumps the blood around your body. 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+)** - A substance which together with chloride makes up common salt. High levels of sodium 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 (PO4)** - 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 accumulate in the blood.

- **Vitamin D** - A vitamin that is made in your skin after the exposure to the sun. The kidneys change 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.
- **Haematocrit (Hct)** - A measure of the percentage of blood made up of red blood cells.
- **Transferrin saturation (TSAT)** - Measured as a percentage, it is the ratio of serum iron level to total iron-binding capacity, multiplied by 100. A value of 15% means that 15% of iron-binding sites of transferrin is being occupied by iron.
- **Ferritin** - A protein that stores iron in your body.

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** - Uses very short energy beams to produce an image of body parts, such as bones and organs.
- **Ultrasound** - Examination of the kidneys, prostate or bladder using sound waves to outline the structure of organs.
- **Computerised Tomography (CT) Scan or Magnetic Resonance Imaging (MRI)** - These tests use multiple small X-ray beams or radio-frequency wavelengths and a strong magnetic field to provide clear and detailed pictures of internal organs and tissues. 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. Dye is injected into your fistula to allow its structure to show up on an 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 emits 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 mean simply 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 be then 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. 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.

For more information about Kidney or Urinary health, please contact our free call Kidney Health Information Service (KHIS) on 1800 454 363. Alternatively, you may wish to email KHIS@kidney.org.au or visit our website www.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.

Revised September 2015

If you have a hearing or speech impairment, contact the National Relay Service on 1800 555 677 or www.relayservice.com.au. For all types of services ask for 1800 454 363.