

Know your KIDNEY numbers

– information for people with Chronic Kidney Disease

People with chronic kidney disease have a lot of blood tests and urine tests. Here we talk about some of the more important ones to help you understand your condition. You can talk to your GP about the others.

Knowing what the numbers on your blood and urine test results mean will help you learn more about your health. You can make changes to your lifestyle and the numbers can mark your progress. If you have kidney disease some of your results may be outside the “normal range” but they can be considered acceptable for someone with damaged kidneys. Your doctor or nurse will guide you on what your own target should be.

Having the tests

Most tests don't need any special preparation but, for those that do, it is important you follow the instructions given to you. If you are not given any instructions, you should still ask if there is anything you need to do to prepare for the test. If you are unsure, ask your doctor or practice nurse.

It is important that you have your tests done in the time frame your doctor or nurses requests. It is one way they can keep track of your health between appointments.

What are the numbers I should know?

Below are just a few of the tests you might have to check how your kidneys are working. There will be many others mentioned here. The more common ones are discussed here.

Blood pressure

Blood pressure is the force of the blood against the artery (blood vessel) walls as the heart pumps it around the body.

When the blood pressure is too high it can damage your artery walls and some of your organs, especially your kidneys.

When your blood pressure is taken there are two numbers recorded such as 130/70. Both numbers are important.

The first number is called the systolic pressure – this is the pressure in the arteries as the heart squeezes out blood during a beat.

The second number is called the diastolic pressure – this is the pressure of the blood in the arteries when the heart relaxes before the next beat.

A normal blood pressure is considered to be anything less than 140/90. Your doctor will talk to you about your blood pressure and whether you need to do something about it. Sometimes your doctor will want your blood pressure **to be lower than 140/90**

It is important to know that your blood pressure does change and can be different from day to day.

Creatinine – normal range 45 -90 umol/L

This is the most common test used to measure kidney function. Creatinine is a normal waste product from the breakdown of protein in muscles which is removed from the body by the kidneys. If the kidneys are not working well there is more creatinine in the blood.

eGFR test (estimated Glomerular Filtration Rate) – normal >90mL/min/1.73m²

When you have a blood creatinine test the laboratory works out the eGFR from the same test. Many laboratories only report eGFR as >60 mL/min/1.73m² as results are not accurate between 60-90mL/min/1.73m². An eGFR gives an estimate of the percentage of normal kidney function that you have. For example an eGFR of 30 mL/min/1.73m² is equal to about 30% of your kidneys working. Kidney function naturally declines with age and values below the normal range may be entirely appropriate for some people

HbA1c (glycosylated haemoglobin level), common test for people with diabetes

The **HbA1c** test measures your average blood glucose over 2–3 months and gives an indication of your longer-term blood glucose control.

The test is used as a regular monitoring tool if you have been diagnosed with diabetes. You should have this test every 3 months if you are diabetic.

HBA1C TARGETS

Non-diabetics 20 - 40 mmol/mol

Pre-Diabetes: 41 and 49 mmol/mol

If your result shows that you have prediabetes, you should make changes to have a healthier lifestyle. This means eating healthy food and keeping physically active. You will have another test in six to 12 months to see if these changes have made a difference.

Diabetes:50 or higher

If your results show that you have diabetes, you will need to see your GP to talk about treatment options. This usually involves changing what you eat, other lifestyle changes, and tablets to lower your blood sugar levels. It may also mean you have to start insulin treatment.

An albumin-creatinine ratio test (ACR) compares the amounts of albumin and creatinine in your urine. ACR is more sensitive for detecting low levels of proteinuria:

Target ACR:

ACR – Albumin/creatinine ratio – normal **<35mg/mmol for females**
<25mg/mmol for males

PCR may be more preferable for quantification and monitoring of higher levels of proteinuria

PCR Target:

PCR – Protein/creatinine ratio - normal **<40mg/mmol for males**
<60mg/mmol for females

This urine test is a good way of picking up any kidney damage.

We recommend screening tests for chronic kidney disease in high-risk groups, such as people with diabetes or high blood pressure. Kidney disease runs in families and so close family members may also want to have their kidney function tested. Being diagnosed with kidney disease before it has progressed gives you the best chance to control the disease. Knowing your numbers will let you know how you are doing

How to get your numbers?

Ask your Doctor or the Practice Nurse for a Kidney Check. They will check your blood pressure and will give you a form to take to the lab to have a blood test, to check how well your kidneys are working. Ask for a copy of your results. These can be sent to you either by email or post. Tell the person taking your tests that you would like a copy. Ask to sit down and go through your blood results with your doctor or nurse so you understand what they mean and check you have the results correct and any areas you can improve on.

What other tests might you have on your blood form?

Urea **3.2-7.7 mmol/L**

This is something your body makes when it breaks down protein. Your kidneys get rid of it through your urine

Electrolytes – these include

- Sodium -**135-145 mmol/L** one of the salts in your blood which your kidneys helps to control. It helps your body create energy and keep the right balance of salt and water.

- **Potassium – 3.5-5.2 mmol/L** is controlled by the kidneys. It is critical for proper functioning of the nerves and muscles, particularly the heart.
- **Chloride -95-107 mmol/L.** is an electrolyte that helps balance the amount of fluid inside and outside of cells. It also helps maintain **blood** volume, **blood** pressure, and the pH of body fluids.

Calcium – 2.1-2.5 mmol/L is controlled in the blood by the parathyroid glands and the kidneys

Phosphate – 0.8-1.5 mmol/l is regulated by the kidneys. High levels may indicate kidney disease.

Albumin -34-48 g/l is a type of protein made by your liver. Albumin helps to keep fluid in your blood stream. It also carries hormones, vitamins and enzymes throughout your body.

Uric Acid -< 0.36 mmol/L is a normal substance got rid of in the urine. High levels can indicate gout, arthritis, and kidney problems.

Cholesterol –<5.0 mmol/L is a fat-like substance which, if high, can cause with heart disease.

For established Cardio Vascular Disease risk (including diabetes) NZGG optimal levels are:

Cholesterol < 4.0,

LDL < 1.8

Red Blood Cell Count - The primary function of red blood cells is to transport oxygen to body **cells** and deliver carbon dioxide to the lungs. Red cells contain **haemoglobin**, a complex iron-containing protein that carries oxygen throughout the body and gives **blood** its red colour. **Abnormal** levels may indicate anaemia (low blood count), red blood cell breakdown, or vitamin deficiencies.

Haemoglobin -For women: 120-160 g/L

For Man:130-170 g/L

White Blood Count – 4.0-11.0 x 10⁹/L White cells are made in the bone marrow and are vital to prevent and fight infection.