

Anaemia and chronic kidney disease

What is anaemia?

Anaemia is a medical condition that occurs when there are not enough red blood cells in your body. Anaemia can happen if your body:

- does not make enough red blood cells
- loses too many red blood cells
- destroys the old red blood cells faster than new cells can be made.

Red blood cells are the most common type of cell in your blood. Their job is to carry oxygen from the lungs to the other parts of the body such as your muscles, bones and other organs. The oxygen delivered by your red blood cells gives you energy and makes sure your body is working as it should. When you have anaemia, it is common to feel tired and low in energy.

What causes anaemia?

There are lots of different reasons why people have anaemia. Some of these relate to other medical conditions and some of them relate to the food you eat and the way your body processes them. Some of the causes of anaemia are:

Medical conditions

- Kidney disease.
- Bone marrow disorders.
- Low levels of a hormone called erythropoietin.
- Genetic disorders - such as sickle cell disease or thalassaemia.
- Immune disorders.
- Chronic disease - such as rheumatoid arthritis, lupus or cancers.
- Hormone disorders – such as hypothyroidism.
- Mechanical destruction – mechanical heart valves can damage red blood cells, reducing their lifespan.

Diet

- Not getting enough vitamins and minerals such as iron, Vitamin B12 and folate from the food you eat.
- Your body not absorbing the vitamins and minerals from your food properly (called 'malabsorption').
- When your body is growing quickly and using lots of energy, you might not get enough energy from the foods you eat. This is common in pregnancy and puberty.

Other factors

- Certain drugs and medications; including alcohol, antibiotics, anti-inflammatory drugs or anticoagulants.
- Infections.
- Blood loss or bleeding e.g., trauma, surgery, peptic ulcer, heavy menstruation, cancer (bowel cancer), or frequent blood donations.

Healthy kidney:



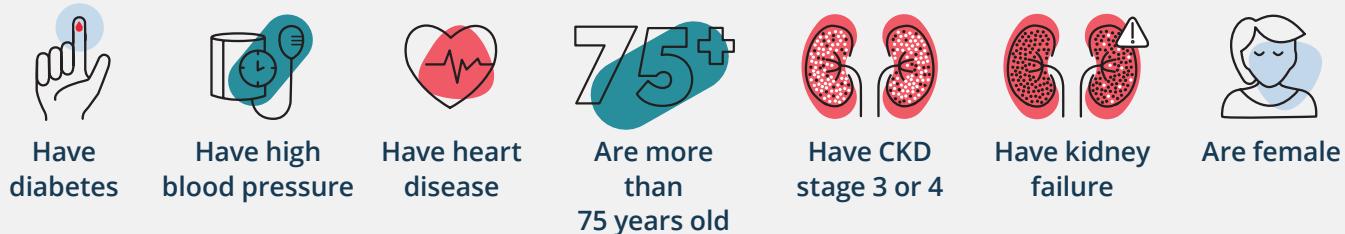
1 in 2 people with **CKD** will develop **anaemia**.

CKD:



Anaemia in CKD usually develops when the **eGFR** is **< 60mL/min/1.73m²**, becoming more common as the eGFR **decreases**.

Anaemia is common if you:



Why does anaemia occur in CKD?

The main causes of anaemia in CKD are:

1. Reduced production of the hormone **erythropoietin** (EPO) that is made by the kidneys.
2. Reduced absorption of the mineral **Iron** (found in meats and leafy green vegetables).

Erythropoietin (EPO) sends a signal to your body to make more red blood cells. Your body is constantly making new red blood cells to replace the old ones, as red blood cells only live for a certain amount of time.

When you have kidney disease, your kidney's ability to make EPO is affected. Without EPO, your body does not get the message to make new red blood cells, which can lead to anaemia.

The other reason anaemia can develop in CKD is because your body is not getting enough iron. This could be due to not getting enough iron in your diet, or your body's ability to use the iron that you are getting. Iron is found in foods such as red meat, poultry, legumes and leafy green vegetables. Your body needs iron to make red blood cells, so not having enough iron can cause anaemia.



Not all anaemia that occurs in people with CKD is caused by the kidney disease itself.

There may be another cause of your anaemia. It is important to work with your doctor to determine if CKD is the underlying cause.

Anaemia can occur with or without symptoms.

What are the symptoms?

Many of the common symptoms of anaemia, such as feeling overly tired or short of breath, are also common to many other medical conditions.

The only way to be sure if you have anaemia is to be tested. If you are experiencing symptoms, you should talk to your doctor. The symptoms of anaemia depend on how severe it is. Mild anaemia may not have any symptoms. Moderate and severe anaemia may give more symptoms.

Common symptoms in people with anaemia are:



Feeling dizzy
or having trouble concentrating.



Pale skin Loss of pink colour in your lips, eyelids, gums and hands.



Chest pain
Your heart must work harder to provide blood to your body. If you experience an unusually fast heart rate or are worried, please speak to your doctor.



Fatigue or weakness Tiredness that does not improve after rest, loss of energy and reduced physical capacity.



Shortness of breath
Your blood may not have enough red blood cells to deliver oxygen to your organs. Your body increases your breathing rate to bring more oxygen into your body.



Feeling unusually cold Sensitivity to the cold may be from a lack of oxygen being delivered to your body.

Fatigue

Fatigue is one of the most common symptoms of anaemia. It occurs because there are not enough red blood cells in your body to carry oxygen to your body for energy.

Fatigue can make it difficult to enjoy life as you once did, however, it is possible to manage anaemia and return to your active lifestyle. With your doctor's help, you can control your anaemia and find relief from extreme fatigue.

How do I know if I have anaemia?

- If you have CKD, it is important to know if you have anaemia.
- People with CKD who have untreated anaemia have a greater risk of hospitalisation and even death.
- This risk increases with the severity of your anaemia.

Haemoglobin (Hb) is the part of the red blood cell that carries the oxygen to the body and a blood test for Hb will tell your doctor if you have anaemia. Keeping your Hb level in a specific range is an important goal for reducing your risk. In anaemia, your Hb level will be reduced.

If you have any symptoms of anaemia, talk to your GP about getting tested. Use the 'conversation aid' below to assist your talk with your GP.

Tests for anaemia

Blood tests



Blood tests measure your level of haemoglobin (Hb) and the size and number of red blood cells. This test is called a complete blood count. Blood tests may also include: **Ferritin** and **transferrin** levels, **folate** and vitamin **B12**.

Medical history



Your medical history will include: Your symptoms, current and past medical conditions, prescription and OTC meds, family history.

Physical exam



A physical exam will include: BP check, heart rate, examination of skin colour rashes, bruising. Sometimes the cause is the kidney disease, but for some, further testing may be required to rule out other causes.

Anaemia treatments and management

Erythropoiesis-stimulating agents (ESAs)

Medicines that send a signal to your body to make more red blood cells. ESAs essentially replacing the EPO hormone that is made in a healthy kidney.

Red blood cell transfusion

A procedure to increase the number of red blood cells in your body by giving you red blood cells from someone else's body through an intravenous drip (IV).

Iron supplements or infusions

Iron helps your body make the haemoglobin on red blood cells. Without enough iron, your red blood cells won't be able to carry the oxygen to the rest of the body. Iron can be found in foods like meat, fish, tofu, beans, spinach, cereal, and other foods. To boost the levels of iron in your body, you may be prescribed iron as a supplement (usually tablets or drinks) or as IV iron infusion delivered via a drip. If you are on dialysis, extra iron may be given during your dialysis treatment.

There is lots of research currently happening on anaemia in CKD with new treatment options expected in the not-too-distant future.



Tips for talking to your doctor about anaemia and CKD

- Before your visit **make a list of your questions** you want to ask your doctor.
- **Take note of your symptoms** – when did they start? How long have you had them? How frequently do they occur?
- Know the names and dosages of the **medications you take**, including over the counter vitamins.
- Make sure your doctor knows that you have kidney disease. If you are seeing someone other than your usual GP or kidney doctor, **don't assume they know all your medical history**.
- It can be useful to **know what your eGFR and stage of kidney disease is** and share this with your health provider.

Questions to ask your doctor...

- Is it possible that I could be experiencing anaemia?
- What sort of tests might I need to determine if I have anaemia?
- What are the treatment options?
- Would changing anything in my lifestyle, such as the food I eat, help me to feel better?
- How long will I need to take treatment for?
- How long after starting medication should I feel better?
- Do I need to see any other health professionals?
e.g., dietitian, kidney specialist etc.
- Are there any side effects of this treatment?
- Is there anything I can do to lessen the side effects of treatment?

During your visit...

- **Take notes** or ask for printed information to take with you – it can often be difficult to remember everything you have been told.
- If you have difficulty understanding or find doctor visits overwhelming, **take a family member** or friend along with you.
- Tell the doctor how you have been feeling – **preparing a list beforehand** may help you to remember everything.





Things to remember:

- ✓ Anaemia is a condition where your body does not have enough red blood cells.
- ✓ Anaemia is very common in people with kidney disease and needs to be treated.
- ✓ There are lots of causes of anaemia.
- ✓ Common symptoms of anaemia include feeling tired, cold, or dizzy, having pale skin, shortness of breath, or chest pain.
- ✓ If you have CKD and experience symptoms of anaemia, you should talk to your GP.

What does that word mean?

Bone marrow – The tissue inside your bones that helps produce blood cells.

Erythropoietin (EPO) – A body chemical (hormone) mainly made by your kidneys that causes the bone marrow to make red blood cells. A lack of this hormone can cause anaemia.

Erythropoiesis stimulating agent (ESA) – A special medicine that encourages your body to make more red blood cells.

Estimated glomerular filtration rate (eGFR) – An estimation of glomerular filtration rate (GFR). *(continued)*

GFR is the best measure of kidney function and helps to determine the stage of kidney disease. It shows how well your kidneys are cleaning your blood.

Ferritin and transferrin – Ferritin is a protein that contains iron. It is the main form of iron stored inside the cells in your body.

Folate – A B vitamin that helps in the production of red blood cells.

Genetic – A condition or trait that is inherited from your parents via your genes.

Haemoglobin (Hb) – The part of red blood cells that helps blood carry oxygen around your body.

Immune disorder – A medical condition that affects the immune system – your body's defence system that fights germs.

Intravenous (IV) – Administered into a vein or taking place within a vein.

Iron – An important dietary mineral that is essential for everyday bodily functions such as the transport of oxygen from your lungs to the rest of your body via your blood.

Vitamin B12 – A vitamin that helps form red blood cells and keeps your nerves working. Low vitamin B12 can cause anaemia.

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