

Anaemia and its treatments for patients with chronic kidney disease

Introduction

If you have kidney disease you are likely to have anaemia, which is a drop in the amount of haemoglobin found in your bloodstream. Anaemia can make you feel very weak and tired. This leaflet will give you information about anaemia, why it happens and what treatment is available to control it.

What is anaemia?

Oxygen is carried around the body by haemoglobin, which is found in the red blood cells. If you do not have enough haemoglobin, your blood will not be able to carry enough oxygen around the body. This causes the symptoms of anaemia.

Anaemia can happen for several different reasons, for example after operations; during pregnancy, because of blood loss from an ulcer or not having enough iron in your diet.

What are the symptoms of anaemia?

Anaemia can cause:

- Loss of energy and a feeling of weakness
- Shortness of breath, unable to go for long distance walks or difficulty climbing stairs. This can also make it difficult to carry out daily tasks
- Irritability, frustration
- Feeling very tired
- Mood swings
- Disturbed sleep
- Loss of interest in sex
- Poor memory.

Reference No.

GHPI0393_11_21

Department

Renal

Review due

November 2024

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What causes anaemia in kidney failure?

Red blood cells are made in the bone marrow and are being produced all the time, to replace those that are lost or die. These cells contain haemoglobin which carries oxygen.

When the number of red blood cells drop, less oxygen is carried around the body causing anaemia and its symptoms. The amount of red blood cells made in your bone marrow is controlled by a hormone called erythropoietin (EPO). The kidneys make EPO in response to the level of oxygen in the blood stream. The less oxygen from fewer red blood cells, the more EPO is made. In kidney failure, your kidneys are not able to make enough EPO when lower oxygen levels cause a need for it.

To find out if you are anaemic, you will have a blood test. This test will measure the amount of haemoglobin in your blood. Your renal doctor will be able to see from the results if you need treatment. People with chronic kidney disease often have haemoglobin levels well below normal.

How is anaemia in chronic kidney failure treated?

If you have kidney failure, it is likely that this is the cause of your anaemia. There are other causes of anaemia which would need to be ruled out by having tests followed by treatment if needed. If your anaemia is caused by kidney failure, your renal doctor may give you an artificial form of the natural hormone EPO and possibly an iron supplement.

How is artificial EPO made?

EPO is made in the laboratory using genetic engineering. Artificial EPO is the same as the EPO our kidneys produce and acts in the same way, by stimulating the bone marrow to make red blood cells.

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How do I take EPO?

You will be given advice and support by the anaemia nurse specialising in this type of treatment. The nurse will be able to tell you about the treatment and answer any questions you may have. EPO is given by injection just under the skin (subcutaneous). Most people can give this injection to themselves once they have been trained, had some practice and gained confidence. If you are injecting the EPO yourself, the best places for these injections are in the thigh or abdominal area, below the belly button. If a nurse is giving the injection, the upper arm is likely to be used.

All the equipment you need will be supplied, including a sharps box for the used needles. There are 2 types of EPO that the Renal Unit prescribes:

- Mircera (Epoetin Beta) a single use, disposable pre-filled syringe.
- Aranesp (Darbepoetin Alfa) a single use, disposable pre-filled syringe.

Storage of EPO

Your EPO must be kept in the fridge at 2 to 8°C (but not in the freezer compartment). A pre-filled syringe can be taken out of the fridge about half an hour before giving the injection. This will bring it up to room temperature.

How long before I feel better?

Your renal doctor will prescribe enough EPO to slowly increase your haemoglobin levels closer to normal. This may take several weeks. Once your haemoglobin has reached the target level set by your renal doctor, they may need to adjust your dosage. Sometimes, a break from EPO may be possible, but if you have kidney failure, the anaemia is likely to come back if treatment is stopped. Regular blood tests will be needed to monitor your progress.

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How quickly will EPO work?

EPO will start to work straight away, but it could be a few weeks before you feel the benefit. The dose will be worked out so that your haemoglobin does not rise too quickly or by too much as this could cause unwelcome side effects.

Will EPO affect my diet?

You may feel better because of your EPO treatment and want to eat more, but you should keep to any special or recommended diet. If you have any questions please ask your dietician.

Will I need more tests?

Your haemoglobin level needs to be measured every 4 weeks after EPO treatment is started, until your target is reached. Your haemoglobin levels can then be measured every 4 to 6 weeks.

Iron levels (ferritin) will be measured every 3 months. You should be able to have your blood tests at your GP's surgery but if you have any problems with this, please contact the anaemia nurse.

What are the side effects of taking EPO?

EPO does not usually cause problems, but some side-effects have been noted. A rise in blood pressure is the side-effect to look out for and this will need careful monitoring. You will have your blood pressure checked regularly from the beginning of your EPO treatment (see the Blood pressure monitoring section further on in this leaflet). If your blood pressure is creeping up, it will need to be treated and any existing medicines you are taking for high blood pressure may have to be adjusted. If you are self-monitoring your blood pressure and it is raised above the level advised by the anaemia nurse, or if you are having bad headaches when taking EPO, please tell your nurse or renal doctor. Headaches may be a symptom of high blood pressure.

Some people have also had 'flu like symptoms' after the injection and for a few days after starting EPO. This normally gets better after a short time. A rash or redness may be seen around the injection site but this usually clears up quickly.

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How do you get your EPO supplies?

The anaemia nurse will set you up with a home delivery service which is provided by the manufacturer of the EPO. Lloyds Homecare will contact you with the delivery details for your syringes. The contact details are below:

Lloyds Pharmacy Clinical Homecare

Scimitar Park
Roydon Road
Harlow
Essex CM19 5GU
Tel: 0345 2636 123

Iron therapy

Iron is vital in the production of red blood cells. Unfortunately, a little iron is lost during each haemodialysis session which adds to the anaemia if you have kidney failure. Peritoneal dialysis and pre-dialysis patients can also suffer with a low iron level (iron deficiency). You may already be taking an iron supplement which will help when treatment with EPO is started as the body uses up its store of iron very quickly. Without extra iron, the EPO may not work properly. Iron is usually given as a single dose straight into a vein, but, occasionally iron tablets may be prescribed.

How do I know if I have enough iron?

A blood test will show if you have a low iron level. If you are on haemodialysis an iron infusion can be given during a dialysis session.

Patients who are not on haemodialysis normally receive an iron infusion in the Medical Day Unit, situated on the Ground Floor of the tower block at Gloucestershire Royal Hospital. But during the Covid-19 pandemic we are asking patients to attend the Medical Day Unit situated within the Emergency Department (College Road Entrance) at Cheltenham General Hospital.

The clinics are held every Monday, Tuesday, Wednesday and Friday.

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What are the side effects of iron therapy?

Iron tablets may cause stomach problems such as loose stools, diarrhoea, constipation and stomach ache. If you have any problems caused by the iron tablets, please tell your renal doctor. Do not take iron tablets with milk or tea or at the same time of day as antacids such as Renecet or Calcichew as these can affect the body's ability to absorb iron. It is also important not to take oral iron supplements at the same time as having an iron infusion; your renal doctor or nurse will normally ask you to stop oral iron before this.

What are the benefits of these treatments?

The main benefit of EPO and iron treatments is that they work very well in treating the symptoms of anaemia. Many patients notice a great difference in the way they feel, having more energy and better concentration. Also, many patients will be able to avoid having blood transfusions to correct their anaemia.

Blood pressure monitoring

The anaemia nurse, district or practice nurse will check your blood pressure before your injection is given. Patients who choose to self-administer will need to buy their own blood pressure monitor and record their own blood pressure. There are a few simple steps that you can follow to be sure that you get an accurate reading of your blood pressure.

Before you take your blood pressure reading

Many things can raise blood pressure for a short time, please follow the advice below:

- Make sure that you do not need to use the toilet.
- Do not take a blood pressure reading just after eating a big meal.
- Do not measure your blood pressure within 30 minutes of drinking caffeine or smoking.
- Wear loose-fitting clothes like a short-sleeved t-shirt so that you can push your sleeve up comfortably.

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- Always use the same arm for blood pressure readings, as each arm gives a slightly different reading. Do not take blood pressure measurements on an arm with a fistula.
- Before you take your readings, rest for 5 minutes. You should be sitting down quietly, preferably at a table, with your arm resting on a firm surface and feet flat on the floor.
- Make sure your arm is supported and that the cuff around your arm is at the same level as your heart. Your arm should be relaxed, not tensed.

How to take your blood pressure using a home blood pressure monitor

- Follow the instructions that came with the monitor and put cuff on.
- Keep still and silent when you take your reading.
- Write down your reading.

Tips on taking blood pressure readings

- Do not 'round' your measurements up or down.
- Try not to be alarmed if you get an unexpected high reading – a one-off reading may be nothing to worry about. Measure your blood pressure again at another time. If you find that the reading is still high (over **170/100**) - **do not administer your EPO** and speak to your renal doctor or nurse.
- Do not check your blood pressure too often – you may get worried about small changes in the readings. Worrying can raise your blood pressure in the short-term.

Notes:

