What is renal anaemia?
A guide for patients and carers

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What is renal anaemia?
Anaemia occurs when there are too few red cells in the blood. Red cells contain haemoglobin (Hb) which transports oxygen from the lungs to the rest of the body to give energy. When the red cell count is low, blood oxygen levels are low. Healthy kidneys recognise this and produce a hormone called erythropoietin (EPO) which stimulates production of red cells in the bone marrow. When kidneys start to fail, little or no EPO is produced and this results in a failure of red cell production. Another factor causing anaemia in kidney disease can be iron deficiency as iron is not absorbed so well when your kidneys start to fail. This leads to renal anaemia.

What are the symptoms of anaemia?
Lack of energy, feeling tired, cold or breathless on exertion are all symptoms of anaemia. When severe, it may become more difficult to perform everyday tasks. Concentration may be impaired as well as sexual function and the ability to sleep well.

What are the long term effects of anaemia?
Your heart rate may increase as your body compensates for lack of oxygen by pumping more blood around the body. This puts extra strain on the heart and the heart wall thickens. Long term anaemia therefore, can be a factor in causing serious heart disease.

How is anaemia diagnosed?
Anaemia is identified by a blood test that measures your levels of haemoglobin (Hb). In healthy adults Hb levels should be above 12-13g/dl (grams per decilitre) however, for those with renal failure, NICE (National Institute for Clinical Excellence) guidelines suggest we should aim for 10.0-12.0 g/dl.
What is the treatment for renal anaemia?

Treatment varies depending on the cause of your anaemia. If you have EPO deficiency you will be given an erythropoietic stimulating agent (ESA) to help your body to produce more red blood cells. Most kidney patients will eventually require treatment with ESA injections. ESAs are artificially made copies of the EPO hormone. They are given as injections under the skin at differing frequencies depending on the needs of the patient. You can self inject at home but if necessary, help with administering the ESA can be arranged.

If your anaemia is caused by iron deficiency you will require iron supplementation. Iron is a major ingredient in red blood cells, helping them to function correctly. Iron deficiency is common in kidney disease and sometimes giving iron alone can be enough to treat the anaemia. Iron can be given in tablet form but can cause stomach irritation or constipation and may not be well absorbed. For this reason the treatment of choice is to give iron directly into a vein (intravenously).

This involves attending the unit for about 45 minutes for a short infusion, followed by one further appointment for a simple blood test. A needle is placed into a vein in the arm and an iron solution is introduced over a period of about 15 minutes. Possible side effects are the same as for any other intravenous drugs. These include:

- fall in blood pressure
- diarrhoea
- possible shock

All of these side effects are rare and in most cases no effects are experienced other than general improvement in well being.

If you require haemodialysis you will be asked to give consent for iron to be given through the machine.
Vitamins B12 and folic acid
These are necessary for the formation of red blood cells and supplements may be required. Folic acid is taken as a daily tablet and vitamin B12 is given as an injection usually at three monthly intervals at your GP surgery.

Blood transfusion
Occasionally we may have to resort to blood transfusion. This will correct anaemia quickly in the short term but it is not permanent and the condition will eventually return. As a natural response to receiving blood, the body produces antibodies and this would make a potential kidney transplant much more difficult. For this reason we only perform a blood transfusion if absolutely necessary. There are risks with blood transfusion such as fluid overload in renal patients as well as infection.

With higher energy levels and less breathlessness, most people notice a benefit from ESAs within a month or two of starting. Treatment is usually continued indefinitely but the dose and frequency of administration may change over time.

Are there any side effects?
A common side effect is a rise in blood pressure therefore this needs to be monitored closely whilst you are receiving this treatment to avoid risks associated with high blood pressure. Other rare side effects include flu-like symptoms or bone pain.

Very rarely antibodies against ESAs have developed resulting in the need for repeated blood transfusions.

What follow up is required?
If your treatment only involved taking iron, a blood test within one month of administration will be needed to decide whether the treatment has worked, or whether an ESA is
required. Iron supplementation will always help ESAs to make red blood cells.

Once an ESA has been given to you, the clinic will wish to monitor you closely, particularly over the first three months of treatment.

To achieve a rise in haemoglobin (Hb) of around 1g/dl per month your dosage of ESA may need to be increased or decreased so that you reach target Hb levels of 10.0g/dl - 12.0g/dl. Any changes in the dosage of your medication will be discussed with you.

ESA therapy may cause your blood pressure to rise and this will need to be treated appropriately. In some cases the amount of ESA may need to be reduced or temporarily stopped until your blood pressure is effectively controlled.

Appointments should be made every 4-6 weeks for blood tests and blood pressure monitoring. This can be done at your GP surgery or at the hospital.

After this 3 month adjustment period monitoring will continue at your regular renal clinic visits.

What else do patients need to know?

It can take 2-3 months before the benefits of ESA are felt and your symptoms reduce/stop.

ESA should be kept refrigerated at all times. It can be taken out when taking it to surgery for administering however, if you are going on holiday, it must be carried in a cool container such as a cool box.

ESA contains no human or animal products.
Prescription of ESA

Once renal anaemia is identified the renal anaemia nurse specialist will be responsible for initial prescription of iron and/or ESA. If you have any queries about nurse prescription, please do not hesitate to ask either the anaemia team or your consultant.

ESA may be prescribed either directly from the hospital or your GP depending on where you live. You will be informed about where your continued supply will be available from.

Please do not hesitate to call us if you have any further queries about any aspect of your anaemia treatment.
The Trust provides free monthly health talks on a variety of medical conditions and treatments. For more information visit www.uhb.nhs.uk or call 0121 627 7803

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