

Erythropoietin (EPO)

This Infosheet explains what erythropoietin (EPO) is, how it is used in myeloma, how it is given and what the possible side-effects are.

What is erythropoietin?

Erythropoietin is a hormone produced in the kidney which stimulates the production of red blood cells in the bone marrow. EPO is a synthetic (man-made) version of this hormone.

Anaemia is a condition in which the body is low in red blood cells.

Red blood cells contain a substance called haemoglobin which is required to transport oxygen around the body. The body needs oxygen so that cells and organs can survive and function properly. Symptoms of anaemia include shortness of breath, dizziness, weakness and tiredness.

Anaemia is a common complication of myeloma and can occur as a direct result of the myeloma itself or as a side-effect of some of its treatments, such as chemotherapy. Both can suppress red blood cell production.

Anaemia can either be acute (hours to days) or chronic (weeks to months), depending on its cause. Whether you have acute or chronic anaemia will determine to a large extent how it is treated and managed.

Chronic or severe anaemia can be treated with EPO.

How is EPO used in myeloma?

EPO is normally used in myeloma after other treatments, such as blood transfusions, have first been tried to reduce anaemia. It is also not usually considered until the myeloma has had a chance to respond to anti-myeloma treatment. This is because anaemia will usually improve with effective anti-myeloma treatment.

Myeloma patients with kidney damage produce less erythropoietin naturally and therefore may have lowered levels of red blood cells.

Treatment with EPO is therefore particularly helpful for myeloma patients with kidney problems. EPO may also be used in myeloma patients who have moderate to severe anaemia that has not improved following blood transfusions.

EPO can take up to four or more weeks to begin to relieve some of the symptoms of anaemia. Once it has started working, blood tests will determine the optimum dose for you and how long treatment should last. EPO does not work for everyone, and if this is the case, your doctor may adjust the dose or stop treatment with EPO and consider giving regular blood transfusions instead.

How is EPO given?

EPO is given by injection under the skin (subcutaneous), usually in the thigh or stomach. The needle used for the injection is very small and thin and may be in a 'pen' form similar to those used by diabetics for injecting insulin. You can give yourself EPO injections or a carer or nurse can do it for you.

There are several different EPO drugs available, including Eprex®

and Binocrit® (epoetin alpha), NeoRocormon® (epoetin beta) and Aranesp® (darbepoietin alpha). The number of injections you need will depend on the type of EPO that has been prescribed and the severity of the anaemia, but it will usually be between one and three per week. Blood tests may be taken to check for deficiencies of iron, folic acid or vitamin B12, which can reduce the effectiveness of EPO and may need correcting.

It is important to store EPO in the refrigerator but not in the freezer compartment. It should not be left out of the fridge for any longer than is necessary and as instructed on the product leaflet.

What are the potential side-effects of EPO?

Most myeloma patients taking EPO don't have any side-effects, but some of the more common side-effects that can occur include:

- An increase in blood pressure that may require treatment
- Mild flu-like symptoms that usually resolve after a few hours or days
- Skin rash

- A rise in the platelet levels in the blood; this will be monitored with regular blood tests
- You can be at increased risk of thrombotic events (such as deep vein thrombosis)

Different brands of EPO can cause different side-effects. Some side-effects can be serious so if you do experience any side-effects whilst on EPO you should discuss them with your doctor or nurse straight away. They may be able to modify the dose of EPO to a level better tolerated by your body or provide additional treatment to minimise side-effects.

Are there any myeloma patients who cannot take EPO?

EPO cannot be given to myeloma patients with uncontrolled hypertension (high blood pressure).

It should also be used cautiously in patients with:

- Heart disease (such as angina)
- Blood clotting disorders
- Epilepsy
- Liver disease

Future directions

Over the past decade or so there have been several new EPO drugs developed. The introduction of these new drugs provides doctors and myeloma patients with more options to choose from for the treatment of their anaemia. The study of the use of EPO in myeloma continues to be an area of active research.

About this Infosheet

The information in this Infosheet is not meant to replace the advice of your medical team. They are the people to ask if you have questions about your individual situation. All Myeloma UK publications are extensively reviewed by patients and healthcare professionals prior to publication.

Other information available from Myeloma UK

Myeloma UK has a range of Essential Guides, Infoguides and Infosheets available covering many areas of myeloma, its treatment and management.

To order your free copies or to talk to one of our Myeloma Information Specialists about any aspect of myeloma, call the **Myeloma Infoline: 0800 980 3332** or **1800 937 773** from Ireland.

The Myeloma Infoline is open from Monday to Friday, 9am to 5pm and is free to phone from anywhere in the UK and Ireland.

Information and support about myeloma is also available around the clock at www.myeloma.org.uk

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Myeloma UK 22 Logie Mill, Beaverbank Business Park, Edinburgh EH7 4HG
T: 0131 557 3332 **E: myelomauk@myeloma.org.uk** Charity No: SC 026116

Myeloma Infoline: 0800 980 3332 or
1800 937 773 from Ireland
www.myeloma.org.uk

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