



InfoSheet

MANAGING ANEMIA ASSOCIATED WITH MYELOMA AND ITS TREATMENT

At least 60%-70% of patients with multiple myeloma have anemia at the time they are diagnosed, and most will experience it during the course of the disease.

This InfoSheet addresses anemia, a common symptom associated with myeloma, which may result in the inability to carry out the activities of daily living and domestic duties. Learn to recognize the symptoms and causes of anemia, and find ways to manage this condition to enhance your quality of life.

What is anemia?

Anemia is often the first symptom of multiple myeloma that leads patients to seek medical attention. It occurs especially when the myeloma is particularly active, i.e. at the time of diagnosis or relapse.

Anemia is typically defined as a decrease in hemoglobin to less than 100 g/L or a reduction of 20 g/L or more from the individual's normal level. It can develop either acutely (over hours to days) or chronically (over weeks to months).

Where does hemoglobin come from? In concrete terms, red blood cells (RBCs), or erythrocytes, are the elements in the blood that carry oxygen to the body's cells. Oxygen circulates on a red cell protein called hemoglobin. If the level of RBCs (and therefore hemoglobin) in the blood is reduced, for whatever reason, the body doesn't receive enough oxygen, resulting in more rapid exhaustion, shortness of breath, and fatigue.

Be sure to report the following symptoms to your physician:

- Shortness of breath on light exertion
- Fatigue that does not decrease with rest
- Lack of energy and motivation
- Increased pulse, lower blood pressure
- Swelling of the legs, especially the ankles
- Dizziness
- Headache
- Paleness
- Chills
- Change in appetite
- Decreased libido

Causes of anemia

Kidney failure is one of the two main causes of anemia in people with myeloma. This reduction in kidney function is caused by the deposition of small proteins that prevent the kidneys from playing their role as filters, and reduce the production of a kidney hormone called erythropoietin, whose role is to stimulate the bone marrow to produce RBCs.

Myeloma itself is also a cause. It is associated with the abnormal, uncontrolled growth of plasma cells (known as myeloma cells) in the bone marrow – where RBCs are also made. When too many myeloma cells are present, the bone marrow gets “crowded out”, which limits the space necessary for the production of new RBCs and leads to a shortage of hemoglobin in the blood.

Nevertheless, impairment of RBC production leading to anemia can be due to a number of other reasons. A pre-existing condition not related to myeloma (for example, the result of diabetes) or a lack of iron (ferritin), vitamin B12, and folic acid required to produce hemoglobin can be responsible for this imbalance. Not to mention active bleeding that may be the result of hemorrhoids or a low platelet level (thrombocytopenia).

Anemia can also be a side effect of treatment (anti-myeloma drugs) such as lenalidomide (e.g., Revlimid), pomalidomide (e.g., Pomalyst), carfilzomib (Kyprolis) or daratumumab (Darzalex) taken alone or in combination. Additionally, it may be caused by other medications such as:

- antibiotics taken for a long time and/or at a high dose
- bisphosphonates (e.g., Aredia and Zometa) for myeloma-related bone disease
- non-steroidal anti-inflammatory drugs (NSAIDs) such as ibuprofen (e.g., Advil and Motrin) or naproxen (Aleve) for pain relief
- some blood pressure medications (diuretics such as Lasix)
- contrast media given for imaging studies (such as gadolinium used in some MRIs)
- proton pump inhibitors (e.g., Losec, Prevacid, Nexium)
- some supplements (such as creatine)
- laxatives and enemas containing sodium phosphate (e.g., FLEET products)

How is anemia treated?

Treating any underlying anemia will help to relieve fatigue. Depending on whether your anemia is acute or chronic, the treatment may vary.

For newly diagnosed myeloma patients who are anemic, the first and most important thing to do is to treat the myeloma. Often, when a treatment successfully attacks and destroys myeloma cells in the bone marrow, the marrow will once again be able to make a normal number of RBCs, and your hemoglobin level will rise. On the other hand, if the anemia is a side effect of treatment, then your physician may adjust the dose and/or schedule of your therapy. Regular blood tests will help determine if the anemia treatments are working or if the doses need to be modified.

Although this is a short-term solution, some people with myeloma may be given blood transfusions to treat acute anemia by rapidly increasing the number of RBCs and hemoglobin in their blood. As the level may last only for a few weeks, you may need regular transfusions.

Incidentally, if you have chronic anemia and your kidneys are not producing a normal amount of erythropoietin (EPO), your doctor may prescribe an injection of erythropoiesis-regulating hormones (e.g. Eprex, Aranesp) to help restore normal RBC production and reduce the need for transfusions.

If anemia is caused by a pre-existing condition, your doctor may prescribe iron, vitamin B12, or folic acid supplements.

Tips for self-management

- Have your blood tests done so that your doctor can monitor your hemoglobin levels regularly.
- Rest regularly: plan your activities to include rest periods.
- Exercise safely: avoid prolonged or intense activity
- Follow a balanced diet rich in iron.
- Take your medication as prescribed. Side effects are possible, but don't interrupt your treatment without consulting a healthcare professional: doctor, nurse or pharmacist.

Precautionary measures

- Discuss with your treating doctor if you are taking medications for diabetes or high cholesterol.
- Your healthcare team may change your dose or schedule of medication if needed, follow the recommendations.
- Prolonged transfusion can lead to resistance to transfused blood from other donors.
- Caution should be exercised when considering EPO agents, balancing potential benefits against risks. They have their own side effects and risks, including potential association with increased tumor growth and reduced survival in some cancer patients. Talk to your healthcare professionals.
- It is extremely important that you speak to your hematologist and pharmacist before taking any kind of supplement or alternative treatment that they have not prescribed, including herbal, traditional or natural medicines and remedies, and vitamins or wellbeing supplements. They have the potential to cause problems when taken alongside your prescribed treatment.
- Be careful when exercising. Overexertion is not recommended because your body's capacity to carry oxygen is reduced and can lead to shortness of breath, increased heart rate and fatigue.

To learn more about anemia and its impact on your on your health, consult Myeloma Canada's **"Managing Pain and fatigue"** InfoGuide in the Resource library at www.myeloma.ca. Your healthcare team, pharmacist, and nutritionist are also there to support you. It's important to share your symptoms with them.

Myeloma Canada wishes to acknowledge and thank Christophe Augé, Ascot Corner Familiprix Pharmacist Owner, and chief editor of Québec Pharmacie, for his contribution. The information disclosed in this InfoSheet is based on existing Myeloma Canada publications reviewed by healthcare professionals and other publications from our sister myeloma organizations: the International Myeloma Foundation (IMF) and Myeloma UK. This information is not meant to replace the advice of a medical professional; they are the best people to ask if you have questions about your specific medical/social situation.