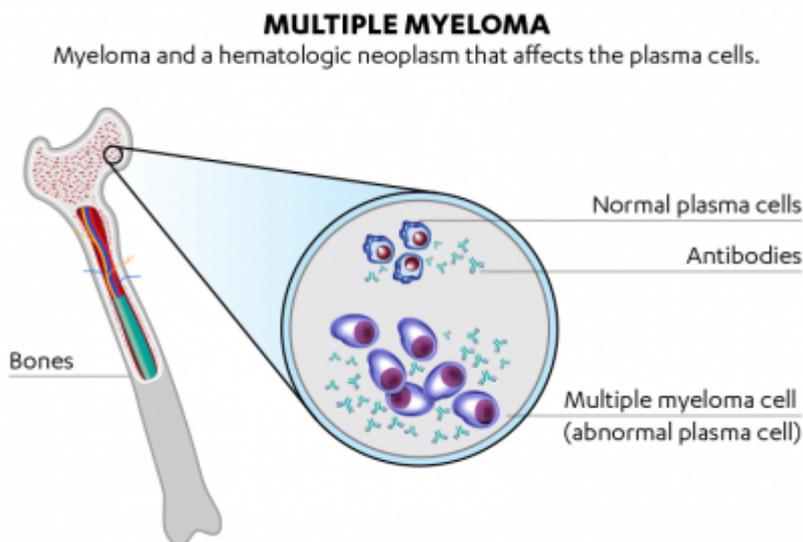


# WHAT IS MULTIPLE MYELOMA?

Multiple myeloma is a cancer of the bone marrow plasma cells, the white blood cells that make antibodies.



A cancerous or malignant plasma cell is called a myeloma cell. Myeloma is called “multiple” because there are frequently multiple patches or areas in the bone where it grows. It can appear as both a tumor and/or an area of bone loss, and it affects the places where bone marrow is active in an adult: the hollow area within the bones of the spine, skull, pelvis, rib cage, and the areas around the shoulders and hips. The word myeloma is from the Greek myelo- meaning “marrow” and -oma meaning “tumor”.

**Multiple myeloma is characterized by an abnormal accumulation of malignant plasma cells** (since changed by an oncogenic event) in the bone marrow, which causes:

- reduction of the normal function of the bone marrow with possible anemia, reduction in white blood cell count (leukopenia) and platelets (thrombocytopenia)
- excess synthesis of abnormal antibodies, all the same (called M protein) that accumulate in the blood and urine, causing the increase in blood viscosity and renal failure
- damage, weakness and bone destruction caused by local imbalance between osteoblasts and osteoclasts.

## PHYSIOLOGICAL CELL PROLIFERATION AND TUMOR

Each cell in the body follows a code of conduct: it is divided only when needed, it differentiates when necessary and dies when the body requires it. This cellular behavior code is necessary to preserve the health of a multi-cellular organism as complex as ours. The control of individual cells takes place through special proteins that promote or inhibit the behavior of a particular cell. For example, if a cell plays a useful role, the proteins promote its survival.

When the cell is no longer needed, the body increases the amount of protein which causes it to die. Analogous mechanisms regulating the division and cell differentiation. Today we know that **cancers like multiple myeloma are caused by acquired damage to these proteins, due to alterations in growth and differentiation.** In practice, a cancer cell does not follow the normal code of conduct, it grows at an inconvenient time and in the wrong place and does not differentiate to perform a useful function.

## Treatment

Multiple myeloma is a serious disease, therefore suitable treatment is absolutely crucial. Today, many treatment options are available.

## My story

"I've been having problems for a while now. I just felt that something was off. Unfortunately, the exact reason for my problems was not found and so I felt more and more frustrated. My loved ones started to question my symptoms, and even I started to question myself. I wondered whether or not I imagined it all. When I was finally diagnosed I felt relief. Finally, my 'imaginary disease' was given a name." Lara, 69 years old

## What are the causes

The cause of myeloma, as for most cancers, it is still not known. Nevertheless, in the last 10 years, studies have provided important information on how you develop multiple myeloma (MM) and some of the factors involved in its progression. Currently, the only known risk factors that affect your chance of getting MM are age (mainly affects older people), race (more common in African Americans), gender (men are more likely to develop the disease), family history of cancer of the lymphoid type and diagnosis of monoclonal gammopathy of undetermined significance (MGUS). In addition, like other cancers, MM is a disease stimulated by the accumulation of genetic mutations and abnormal cytogenetics, which lead to the alteration of the mechanisms of growth and cell death. Although there is no single genetic mutation specific to the MM, the disease is associated with a specific group of genetic abnormalities that are not observed in other malignant tumors.

## What are the symptoms

The Multiple Myeloma (MM) manifests itself clinically in a very varied way: there are no specific symptoms of the disease. Up to one third of patients can be asymptomatic at the time of diagnosis, meaning that the disease is discovered during a routine blood analysis. The most common features of the disease are: bone symptoms such as back pain, especially in long bones, skull, ribs and pelvis. The pain is persistent and usually responds poorly to the

common anti-pain medications. If the bone damage persists, one can observe an abnormal curvature of the spine, vertebral collapse or pathological fractures. In severe cases, neurological problems may appear, such as weakness, loss of sensation in the legs, loss of bladder control due to compression of the spinal cord or nerve roots from the skeletal lesions, frequent and persistent infections, especially respiratory. Fatigue, poor exercise tolerance and shortness of breath after mild exertion. Anemia is also a common complication of MM. Moreover, reddish / purple lesions on the skin such as bruising or bruising, bleeding gums or nose (epistaxis) if there is thrombocytopenia; Other non-specific symptoms, such as confusion, headache, visual disturbances, fever and weight loss (found especially in the case of renal insufficiency serious and/or hypocalcemia).

PHCZ/HEM/0717/0001