



Multiple Myeloma (MM) EU Fact Sheet

Overview

Multiple myeloma is a life-threatening cancer of plasma cells, a type of white blood cell in the bone marrow that helps fight infection.¹ When plasma cells become cancerous and multiply too quickly, they are called myeloma cells.¹ The accumulation of these myeloma cells can form tumours in bones throughout the body.¹

Healthy bone marrow produces stem cells that develop into red blood cells that carry oxygen in the body, white blood cells that fight infection and disease, or platelets that help prevent bleeding by causing blood clots.¹ Health problems caused by multiple myeloma can affect the bones, the immune system, the kidneys and the blood cell counts.¹

Multiple myeloma is characterised by a recurring pattern of remission and relapse.² Remission in multiple myeloma occurs when no signs or symptoms are present.³ A relapse occurs when signs or symptoms of the disease return after a period of improvement.⁴ The ability to achieve and sustain a meaningful response to treatment declines with each relapse due to acquired drug resistance and disease biology.⁵ When a disease is refractory, it no longer responds to treatment.⁴

Incidence

Nearly 230,000 people worldwide are living with multiple myeloma, making up about 12 percent of all haematological malignancies.⁶ In Europe, approximately 39,000 patients are diagnosed with multiple myeloma each year.⁶

Symptoms

The exact cause of multiple myeloma is not known and symptoms often do not present in the early stages of the disease, making an early diagnosis very difficult.⁸ Symptoms and signs of multiple myeloma may include, but are not limited to:

- Abnormal bleeding³
- Bone and/or back pain¹
- Bone fractures involving the spine, hip bones and skull^{1,8}
- Low blood counts⁸
- High blood levels of calcium⁸
- Nervous system symptoms, including spinal cord compression, nerve damage and hyperviscosity³
- Kidney problems⁸
- Infections⁸

Risk Factors

Similar to symptoms, scientists have found few risk factors that may affect someone's chances of getting multiple myeloma.¹ The most common risk factors are:

- **Age:** The disease occurs most frequently in people 65-74⁷
- **Family History:** Having an immediate relative with multiple myeloma increases the risk four-fold⁹
- **Gender:** Incidence is slightly higher among men than women¹
- **Radiation:** Exposure to high doses of radiation, largely due to environmental factors¹
- **Race:** More common among people of African descent¹
- **Weight:** Carrying excess body weight¹⁰

Fast Facts

- *Multiple myeloma is an orphan disease that accounts for approximately one percent of all cancers.⁶*
- *The disease is characterized by a recurring pattern of remission and relapse.² With each relapse, patients' ability to achieve and sustain a meaningful response declines.⁵*
- *In 2012, more than 24,000 people in Europe died of multiple myeloma.⁶*

- **Having Other Plasma Cell Diseases:** Many people with monoclonal gammopathy of undetermined significance or solitary plasmacytoma will eventually develop multiple myeloma¹⁰

Diagnosis

Lab tests on blood and/or urine, imaging tests and a bone marrow biopsy may be performed on people exhibiting multiple myeloma symptoms.

- **Lab tests:** Blood and urine tests can determine if there is an abnormally high amount of protein, which can indicate multiple myeloma²
- **Imaging tests:** X-ray, MRI, CT or positron emission tomography tests may be performed to detect bone problems associated with multiple myeloma⁹
- **Bone marrow biopsy:** Bone marrow biopsies determine if there are myeloma cells in the bone marrow, and can also help analyze their chromosome abnormalities⁹

Treatment

While there is no cure for multiple myeloma, treatment can help relieve pain, control complications of the disease, stabilize the condition and slow the progress of the disease.¹ Treatments prescribed for multiple myeloma are largely dependent on the stage of the disease and the individual patient.⁸ Treatment options may include one or a combination of the following:

- Chemotherapy and corticosteroids to kill myeloma cells¹
- Targeted therapies to block the growth of and sometimes kill myeloma cells¹
- Bone marrow or stem cell transplantation to replace the diseased cells¹
- Bisphosphonates to reduce bone pain and fractures¹
- Radiation therapy to relieve bone pain or treat bone tumours³

Additional Resources

For patients living with multiple myeloma, and their families, a number of valuable resources are available in the EU:

- International Myeloma Foundation - www.myeloma.org
- Myeloma Patients Europe - www.myelomapatientseurope.org
- Myeloma UK - www.myeloma.org.uk
- Rarer Cancer Foundation - www.rarercancers.org.uk
- Myeloma Deutschland - myelom-gruppe.lhrm.de
- Association Francaise des Malades du Myelome Multiple - www.af3m.org
- Asociacion Espanola de Afectados por Linfoma, Mieloma y Leucemia - www.aeal.es
- The MAX Foundation - www.themaxfoundation.org/aboutus/default.aspx
- Myelom und Lymphomhilfe Osterreich, Austria - www.myelom-lymphom.at

Media Inquiries

Emma Gilbert, +41 41 369 2542, egilbert@amgen.com

References

1. Cleveland Clinic. Multiple Myeloma and Other Plasma Cell Neoplasms: Treatment. Diseases and Conditions. Available at:http://my.clevelandclinic.org/health/diseases_conditions/hic_Multiple_Myeloma_and_Other_Plasma_Cell_Neoplasms_Treatment. Accessed on: October 12 2015.
2. Jakubowiak A. Management Strategies for Relapsed/Refractory Multiple Myeloma: Current Clinical Perspectives. *Seminars in Hematology* 2012;49(3)(1), S16-S32.
3. Cleveland Clinic. Multiple Myeloma. Available at: www.clevelandclinicmeded.com/medicalpubs/diseasemanagement/hematology-oncology/multiple-myeloma/. Accessed October 12, 2015.
4. Dimopoulos, MA, San-Miguel, JF, Anderson, KC. Emerging therapies for the treatment of relapsed or refractory multiple myeloma. *European Journal of Haematology*. 2011; Jan 86(1):1-15.
5. Kumar S et al. Clinical Course of Patients with Relapsed Multiple Myeloma. Mayo Clinic Proceedings. 2004;79(7):867-874.
6. Ferlay J, et al. GLOBOCAN 2012 v1.0, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer, 2013. Available at: globocan.iarc.fr. Accessed on October 12, 2015.



7. National Cancer Institute. Surveillance, Epidemiology, and End Results Program Turning Cancer Data Into Discovery. <http://seer.cancer.gov/statfacts/html/mulmy.html>. Accessed October 12, 2015.
8. Mayo Clinic. "Multiple myeloma" Available at: <http://www.mayoclinic.org/diseases-conditions/multiple-myeloma/basics/causes/con-20026607?p=1>. Accessed on November 18, 2015.
9. Lynch HT, et al. Familial myeloma: study of a unique family. *The New England Journal of Medicine*. 2008;359(2):152-157.
10. Cancer Research UK. Myeloma risks and causes. Available at: <http://www.cancerresearchuk.org/about-cancer/type/myeloma/about/myeloma-risks-and-causes>. Accessed on: November 18, 2015