

Multiple Myeloma Risk Factor Information

This document gives a general overview of risk factors. The document covers:

- About Cancer and Risk Factors
- About Multiple Myeloma
- Known Risk Factors
- Possible Risk Factors
- Other Risk Factors That Have Been Investigated
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About Cancer and Risk Factors

Cancer is not just one disease.

Cancer is a group of over 100 different diseases. Cancer occurs when abnormal cells grow out of control and crowd out the normal cells. It can start anywhere in the body and can spread (metastasize) to other parts of the body. Cancer types are named for the original location in the body and the type of cell or tissue. Different types of cancer have different causes and risk factors.

Cancer can take a long time to develop.

The cause of cancer is sometimes related to events that happened many years ago. Most cancer types are thought to take anywhere from 10 to over 50 years to develop. A few types, such as leukemia or lymphoma, are thought to take less than 10 years.

A risk factor is anything that increases your chance of getting cancer.

Some risk factors can be controlled while others cannot. Risk factors can include:

- Hereditary conditions (e.g., genes passed down from parents)
- Medical conditions or treatments (e.g., a previous cancer diagnosis)
- Infections (e.g., human papilloma virus)
- Lifestyle factors (e.g., smoking cigarettes)
- Environmental exposures (e.g., certain air pollutants)

Most risk factors do not directly cause cancer.

A risk factor influences the development of cancer but usually does not directly cause cancer. Instead, a combination of risk factors likely drives cancer development. For example, genetic factors can make individuals more likely to get cancer when they are exposed to a cancer-causing chemical.

Environmental risk factors depend on how, how much, and how long you are exposed.

Your risk from exposure to certain chemicals or radiation depends on the type, extent, and duration of exposure. For example, inhaling a certain chemical may increase your risk of getting cancer. However, touching the same chemical may not. In addition, some substances may increase your risk only if you are exposed to high amounts over a long time.

It is difficult to identify the exact causes of cancer.

- Many cancers can develop due to random chance.
- Multiple risk factors can act in combination.
- Risk factors can change over time.
- Cancer might not develop or get diagnosed for a long time after an initiating event (such as exposure or random cell mutation).

Knowing your risk factors can help you make more informed choices.

Discuss your risk factors with your health care provider to make more informed decisions on lifestyle and health care.

About Multiple Myeloma

Multiple myeloma is a cancer of the plasma cells.

Plasma cells are an important part of the immune system and make antibodies that circulate in the blood to help fight infection and disease. They are mainly found in the bone marrow. Multiple myeloma begins when plasma cells become abnormal and grow out of control. The abnormal plasma cells build up in the bone marrow and may form tumors that prevent the bone marrow from making enough healthy blood cells.^{1,3}

Multiple myeloma is relatively uncommon.

The American Cancer Society estimates that 34,470 people will be diagnosed with multiple myeloma in the U.S. in 2022. About 1 in 132 people will get multiple myeloma during their lifetime.^{1,2} In Massachusetts, multiple myeloma accounted for 1.7% of all cancers between 2013 and 2017.⁴

Multiple myeloma is more common in black individuals and adults over age 65.

For unknown reasons, multiple myeloma is more than twice as common among black individuals than white individuals.^{1, 3, 5} The risk of developing multiple myeloma increases with age with most diagnoses occurring in people age 65 or older.¹ About 2% of diagnoses occur in people under 40.³ Men are slightly more likely to develop multiple myeloma than women.¹

Known Risk Factors

The exact causes of multiple myeloma are largely unknown. Most develop for no apparent reason and are not associated with specific risk factors.^{1, 3}

Medical Conditions

Plasma cell diseases:

Pre-existing medical conditions such as monoclonal gammopathy of undetermined significance (MGUS) and solitary plasmacytoma increase the likelihood of developing multiple myeloma. MGUS is a condition in which abnormal plasma cells produce extra amounts of an antibody protein called monoclonal protein (or M protein), which is not needed by the body and does not help fight infection. Solitary plasmacytoma is a single tumor that develops in bone marrow or other tissue.^{1, 3, 5}

Hereditary Conditions

Family history:

Multiple myeloma seems to run in some families.¹ The risk of multiple myeloma is higher for people who have a first-degree relative (parent, sibling, child) with the disease. However, most patients have no relatives with this type of cancer.^{1, 3, 6}

Lifestyle Factors

Obesity:

Being overweight or obese increases the risk of developing multiple myeloma.^{1, 2, 6}

Possible Risk Factors

Medical Conditions

Organ transplants:

An increased risk for multiple myeloma has been consistently observed among recipients of solid organ transplants that receive immunosuppressive medications to help prevent organ rejection. Transplant-related immunosuppression is thought to be the driving factor.⁶

Autoimmune diseases:

Having an autoimmune disorder appears to increase the risk of multiple myeloma. The association was slightly stronger for conditions with detectable autoantibodies or those with a history of pernicious anemia.⁶

Infections

Certain viral or bacterial infections:

Specific viral infections such as human immunodeficiency virus (HIV) (the virus that causes AIDS) and herpes zoster (shingles), as well as some bacterial infections, such as pneumonia, meningitis, and septicemia, may play a role in the risk of multiple myeloma.⁶

Environmental Exposures

Ionizing radiation:

There is inconsistent evidence of an association between high-dose exposure to ionizing radiation and multiple myeloma. An increased risk of multiple myeloma has been observed among workers in the nuclear industry exposed to ionizing radiation. However, findings are inconsistent in studies of workers in other radiation-exposed occupations, atomic bomb survivors, and individuals receiving radiation treatment. Further investigation is needed.⁶

Certain chemicals in the workplace:

Certain workplace exposures may increase the risk of multiple myeloma. These include exposure to asbestos, benzene, pesticides, herbicides (including Agent Orange), and other chemicals used in rubber manufacturing, wood products, and firefighting.^{3, 6}

Other Risk Factors That Have Been Investigated

Lifestyle Factors

Tobacco use?

Many studies have shown that smoking is not a risk factor for multiple myeloma.⁶

Hair dye use?

Multiple studies and recent evaluations show little evidence of an association between hair dye use and multiple myeloma.⁶

References / More Information

This information sheet should not be considered exhaustive. For more information on other possible risk factors and health effects being researched, please see the resources below. Much of the information contained in this summary has been taken directly from these sources. This material is provided for informational purposes only and should not be considered as medical advice. Consult your physician if you have questions regarding a specific medical problem or condition.

American Cancer Society (ACS). <http://www.cancer.org>

1. ACS. 2022. Multiple Myeloma.
2. ACS. 2022. Cancer Facts & Figures 2022.

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3. ASCO. 2021. Multiple Myeloma.

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4. MCR. 2021. Cancer Incidence and Mortality in Massachusetts 2013-2017: Statewide Report. Available at: <https://www.mass.gov/doc/cancer-incidence-and-mortality-in-massachusetts-2013-2017-statewide-report/download>

National Cancer Institute (NCI). <http://www.cancer.gov/research/progress/snapshots/myeloma>

5. NCI. 2022. Plasma Cell Neoplasms (Including Multiple Myeloma) – Patient Version.

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6. Purdue MP, Hofmann JN, Brown EE, and Vachon CM. 2018. Multiple Myeloma. In: Cancer Epidemiology and Prevention. 4th Ed, edited by Thun MJ, Linet MS, Cerhan JR, Haiman CA, and Schottenfeld D. New York: Oxford University Press.

September 2022

