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Waldenstrom Macroglobulinemia Causes, Risk Factors, and Prevention

Risk Factors

A risk factor is anything that affects your chance of getting a disease such as cancer. Learn more about the risk factors for Waldenstrom macroglobulinemia.

- [What Are the Risk Factors for Waldenstrom Macroglobulinemia?](#)
- [Do We Know What Causes Waldenstrom Macroglobulinemia?](#)

Prevention

At this time there is not a way to protect against this cancer. Learn more about what is known.

- [Can Waldenstrom Macroglobulinemia Be Prevented?](#)

What Are the Risk Factors for Waldenstrom Macroglobulinemia?

A risk factor is anything that affects your chance of getting a disease such as cancer. Different cancers have different risk factors. Some cancer risk factors, like smoking, can be changed. Others, like a person's age or family history, can't be changed.

Researchers have found a few risk factors that make a person more likely to develop Waldenstrom macroglobulinemia (WM). But most people with these risk factors never develop WM.

Monoclonal gammopathy of undetermined significance (MGUS)

Monoclonal gammopathy of undetermined significance (MGUS) is an abnormality of antibody-making cells that is related to [multiple myeloma](#)¹ and WM. In MGUS, like WM and multiple myeloma, abnormal cells in the bone marrow make large amounts of one particular antibody. This antibody is called a monoclonal (or M) protein, and the condition is called a **monoclonal gammopathy**.

- As long as the patient has no symptoms from the abnormal cells or the M protein they make, the abnormal cells make up less than 10% of the bone marrow, and the amount of abnormal M protein in the blood is not very high (less than 3 g/dl), this condition is called MGUS.
- MGUS itself does not cause health problems, but each year about 1% to 2% of people with MGUS go on to develop a related cancer (like multiple myeloma, WM, or [lymphoma](#)²) or another serious health problem (like amyloidosis).

Age

The risk of WM goes up with age. It is rare among people younger than 50 years old.

Race

WM is more common among whites than among African Americans. In contrast, multiple myeloma is about twice as common among African Americans as white Americans. The reasons for these differences are not known.

Sex

Men are more likely than women to develop this disease. The reason for this is not known.

Heredity

Inherited genes seem to play a role in at least some people who get WM. About 1 in 5 people with WM has a close relative with WM or with a related B-cell disease, such as MGUS or certain types of lymphoma or [leukemia](#)³.

Hepatitis C

Hepatitis C is caused by infection with a virus (known as the hepatitis C virus, or HCV). Some studies have found that people with chronic hepatitis C infection might be more likely to develop WM than people without the virus. But not all studies have found such a link.

Certain autoimmune diseases

Some research has suggested that people with certain types of autoimmune disease, such as Sjögren (Sjogren) syndrome, might be at higher risk for WM.

Hyperlinks

1. <https://www.cancer.org/content/cancer/en/cancer/multiple-myeloma.html>
2. <https://www.cancer.org/content/cancer/en/cancer/non-hodgkin-lymphoma.html>
3. <https://www.cancer.org/content/cancer/en/cancer/leukemia.html>

References

Castillo JJ. Plasma cell disorders. *Prim Care*. 2016; 43:667-691. doi: 10.1016/j.pop.2016.07.002. Epub 2016 Oct 14.

Giordano TP, Henderson L, Landgren O, et al. Risk of non-Hodgkin lymphoma and lymphoproliferative precursor diseases in US veterans with hepatitis C virus. *JAMA*. 2007;297:2010–2017.

Kristinsson SY, Koshiol J, Björkholm M, et al. Immune-Related and Inflammatory Conditions and Risk of Lymphoplasmacytic Lymphoma or Waldenström Macroglobulinemia. *JNCI Journal of the National Cancer Institute*. 2010;102(8):557-567. doi:10.1093/jnci/djq043.

Rajkumar SV, Dispenzieri A. Chapter 104: Multiple myeloma and related disorders. In: Niederhuber JE, Armitage JO, Dorshow JH, Kastan MB, Tepper JE, eds. *Abeloff's Clinical Oncology*. 5th ed. Philadelphia, Pa. Elsevier: 2014.

See all references for Waldenstrom Macroglobulinemia
(<https://www.cancer.org/content/cancer/en/cancer/waldenstrom-macroglobulinemia/references.html>)

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Do We Know What Causes Waldenstrom Macroglobulinemia?

Some [risk factors](#)¹ can make a person more likely to get Waldenstrom macroglobulinemia (WM), but often it's not clear exactly how these factors might increase risk.

Scientists have learned how certain changes in the DNA inside normal lymphocytes can make them become [lymphoma](#)² or [multiple myeloma](#)³ cells. Changes in the DNA of some lymphoma cells can also cause them to make high levels of IgM, which leads to most of the [symptoms of WM](#)⁴.

The DNA inside our cells makes up our genes – the instructions for how our cells function. We tend to look like our parents because they are the source of our DNA. But DNA affects more than how we look.

- Some genes control when cells grow, divide to make new cells, and die at the right time. They are called **oncogenes**.
- Other genes slow down cell division or make cells die at the right time. They are called **tumor suppressor genes**.

Cancers can be caused by DNA changes that turn on oncogenes or turn off tumor suppressor genes.

Some people inherit DNA changes from a parent that increase their risk for certain types of cancer. Researchers are studying families that have many cases of WM to try to find the genes that might cause this disorder in some people.

The DNA changes found in WM cells are usually acquired after birth (not passed on

from a parent). Some of these acquired changes may have outside causes, but often they occur for no apparent reason. They seem to happen more often as we age, which might help explain why WM usually occurs in older people.

Recent research has found that about 9 times out of 10, WM cells have a mutation (change) in a gene known as *MYD88*, which normally helps immune system cells signal each other and helps keep them alive. The DNA change in this gene might make it stay turned on all the time, which might help the WM cells survive longer than they should.

Sometimes, WM cells have other kinds of DNA changes. In each human cell, the DNA is packaged in 23 pairs of chromosomes. In some WM cells, a piece of a chromosome is missing. This is called a **deletion**. The most common chromosome defect seen in WM is a deletion of part of chromosome 6. It's not clear exactly which genes this might affect.

Another type of chromosome defect in WM is called a **translocation**. In a translocation, a piece of one chromosome becomes attached to a different chromosome. Chromosome changes like these can cause oncogenes to be turned on or tumor suppressor genes turned off.

Researchers have found that some patients with WM have important changes or defects in other bone marrow cells. These changes might also help cancer cells grow. Certain cells in the bone marrow called dendritic cells release a hormone called interleukin-6 (IL-6) that helps normal plasma cells and plasmacytoid lymphocytes grow. Excess IL-6 production by these cells appears to be an important factor in the development of WM.

Scientists are learning about the exact gene changes that cause WM. But even though they have found some of these gene changes, they still do not know why these changes occur.

Hyperlinks

1. <https://www.cancer.org/content/cancer/en/cancer/waldenstrom-macroglobulinemia/detection-diagnosis-staging/signs-symptoms.html>
2. <https://www.cancer.org/content/cancer/en/cancer/non-hodgkin-lymphoma.html>
3. <https://www.cancer.org/content/cancer/en/cancer/multiple-myeloma.html>
4. <https://www.cancer.org/content/cancer/en/cancer/waldenstrom-macroglobulinemia/detection-diagnosis-staging/signs-symptoms.html>

References

National Comprehensive Cancer Network (NCCN). Clinical Practice Guidelines in Oncology: Waldenstrom's macroglobulinemia/Lymphoplasmacytic lymphoma. V.1.2018. Accessed at www.nccn.org/professionals/physician_gls/pdf/waldenstroms.pdf on June 21, 2018.

Rajkumar SV, Dispenzieri A. Chapter 104: Multiple myeloma and related disorders. In: Niederhuber JE, Armitage JO, Dorshow JH, Kastan MB, Tepper JE, eds. *Abeloff's Clinical Oncology*. 5th ed. Philadelphia, Pa. Elsevier: 2014.

Treon SP. XIII. Waldenström's macroglobulinaemia: An indolent B-cell lymphoma with distinct molecular and clinical features. *Hematol Oncol*. 2013;31 Suppl 1:76–80.

Treon SP, Hunter ZR, Aggarwal A, et al. Characterization of familial Waldenstrom's macroglobulinemia. *Ann Oncol*. 2006;17:488–494.

Treon SP, Xu L, Yang G, et al. MYD88 L265P somatic mutation in Waldenström's macroglobulinemia. *N Engl J Med*. 2012;367:826–833.

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Can Waldenstrom Macroglobulinemia Be Prevented?

Most of the risk factors for Waldenstrom macroglobulinemia (WM), such as older age or monoclonal gammopathy of undetermined significance (MGUS), can't be changed or controlled, so there is no way to prevent cancers that might be related to these risk factors.

Some research suggests that people with hepatitis C might be more likely to develop WM. There is currently no vaccine to prevent [hepatitis C](#)¹, but there are ways to lower your risk of getting it, such as avoiding known risk factors like injection drug use or unprotected sex with many partners. Hepatitis C can also be treated effectively in many cases, although it's not known how this might affect a person's risk of WM.

Hyperlinks

1. <https://www.cancer.org/content/cancer/en/cancer/cancer-causes/infectious-agents/infections-that-can-lead-to-cancer/viruses.html>

References

Giordano TP, Henderson L, Landgren O, et al. Risk of non-Hodgkin lymphoma and lymphoproliferative precursor diseases in US veterans with hepatitis C virus. *JAMA*. 2007;297:2010–2017.

Rajkumar SV, Dispenzieri A. Chapter 104: Multiple myeloma and related disorders. In: Niederhuber JE, Armitage JO, Dorshow JH, Kastan MB, Tepper JE, eds. *Abeloff's Clinical Oncology*. 5th ed. Philadelphia, Pa. Elsevier: 2014.

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