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Chronic Myeloid Leukemia Causes, Risk Factors, and Prevention

Learn about the risk factors for chronic myeloid leukemia and if there are things you might be able to do to help lower your risk.

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 chronic myeloid leukemia.

- [Risk Factors for Chronic Myeloid Leukemia](#)
- [What Causes Chronic Myeloid Leukemia?](#)

Prevention

There's no known way to prevent most cases of chronic myeloid leukemia. Some kinds of cancer can be prevented by making lifestyle changes and avoiding certain risk factors, but this isn't true for most cases of CML. The only potentially avoidable risk factor for CML is exposure to high doses of radiation, which applies to very few people.

Risk Factors for Chronic Myeloid Leukemia

A risk factor is something that affects a person's chance of getting a disease such as

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What Causes Chronic Myeloid Leukemia?

Normal human cells grow and function based mainly on the information contained in each cell's chromosomes. Chromosomes are long molecules of DNA in each cell. DNA is the chemical that carries our genes, the instructions for how our cells function. We look like our parents because they are the source of our DNA. But our genes affect more than the way we look.

Each time a cell prepares to divide into 2 new cells, it must make a new copy of the DNA in its chromosomes. This process is not perfect, and errors can occur that may affect genes within the DNA.

Some genes control when our cells grow and divide.

- Certain genes that promote cell growth and division are called **oncogenes**.
- Others that slow down cell division or cause cells to die at the right time are called **tumor suppressor genes**.

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

Over the past few years, scientists have made great progress in understanding how certain changes in DNA can cause normal bone marrow cells to become leukemia cells. In no cancer is this better understood than in chronic myeloid leukemia (CML).

Each human cell contains 23 pairs of chromosomes. Most cases of CML start during cell division, when DNA is "swapped" between chromosomes 9 and 22. Part of chromosome 9 goes to 22 and part of 22 goes to 9.

This is known as a **translocation** and it makes a chromosome 22 that's shorter than normal. This new abnormal chromosome is called the Philadelphia chromosome. **The Philadelphia chromosome is found in the leukemia cells of almost all patients with CML**

The swapping of DNA between the chromosomes leads to the formation of a new gene

(an oncogene) called *BCR-ABL*

Can Chronic Myeloid Leukemia Be Prevented?

There's no known way to prevent most cases of chronic myeloid leukemia (CML). Some kinds of cancer can be prevented by making lifestyle changes and avoiding certain risk factors, but this is not true for most cases of CML. The only potentially avoidable risk factor for CML is exposure to high doses of radiation, which applies to very few people.

Hyperlinks

1. www.cancer.org/cancer/types/chronic-myeloid-leukemia/references.html

References

[See all references for Chronic Myeloid Leukemia](#)

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