

## Leukemia, Causes & Risk factors

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Leukemia is a cancer of the blood or bone marrow. Bone marrow produces blood cells. Leukemia can develop due to a problem with blood cell production. It usually affects the leukocytes, or white blood cells.

Leukemia is most likely to affect people over the age of 55 years, but it is also the most common cancer in those aged less than 15 years.

The National Cancer Institute estimates that 61,780 people will receive a diagnosis of leukemia in 2019. They also predict that leukemia will cause 22,840 deaths in the same year.

Acute leukemia develops quickly and worsens rapidly, but chronic leukemia gets worse over time. There are several different types of leukemia, and the best course of treatment and a person's chance of survival depends on which type they have.

In this article, we provide an overview of leukemia, causes, treatment, type, and symptoms.

### Causes

Leukemia develops when the DNA of developing blood cells, mainly white cells, incurs damage. This causes the blood cells to grow and divide uncontrollably.

Healthy blood cells die, and new cells replace them. These develop in the bone marrow.

The abnormal blood cells do not die at a natural point in their life cycle. Instead, they build up and occupy more space.

As the bone marrow produces more cancer cells, they begin to overcrowd the blood, preventing the healthy white blood cells from growing and functioning normally.

Eventually, the cancerous cells outnumber healthy cells in the blood.

### Risk factors

There is a range of risk factors for leukemia. Some of these risk factors have more significant links to leukemia than others:

**Artificial ionizing radiation:** This could include having received radiation therapy for a previous cancer, although this is a more significant risk factor for some types than others.

**Certain viruses:** The human T-lymphotropic virus (HTLV-1) has links to leukemia.

**Chemotherapy:** People who received chemotherapy treatment for a previous cancer have a higher chance of developing leukemia later in life.

**Exposure to benzene:** This is a solvent that manufacturers use in some cleaning chemicals and hair dyes.

**Some genetic conditions:** Children with Down syndrome have a third copy of chromosome 21. This increases their risk of acute myeloid or acute lymphocytic leukemia to 2-3%, which is higher than in children without this syndrome.

Another genetic condition with links to leukemia is Li-Fraumeni syndrome. This causes a change to the TP53 gene.

**Family history:** Having siblings with leukemia can lead to a low but significant risk of leukemia. If a person has an identical twin with leukemia, they have a 1 in 5 chance of having the cancer themselves.

**Inherited problems with the immune system:** Certain inherited immune conditions increase the risk of both severe infections and leukemia. These include:

- ataxia-telangiectasia
- Bloom syndrome
- Schwachman-Diamond syndrome

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