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About Acute Myeloid Leukemia (AML)

Get an overview of acute myeloid leukemia and the latest key statistics in the US.

Overview of AML

If you have been diagnosed with acute myeloid leukemia or are worried about it, you likely have a lot of questions. Learning some basics is a good place to start.

- [What Is Acute Myeloid Leukemia \(AML\)?](#)

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What Is Acute Myeloid Leukemia (AML)?

many kinds of cancer. Cells in nearly any part of the body can become cancer. To learn more about cancer and how it starts and grows, see [What Is Cancer?](#)¹

Leukemias are cancers that start in cells that would normally develop into different types of blood cells. Most often, leukemia starts in early forms of white blood cells, but some leukemias start in other blood cell types. There are several types of leukemia, which are divided based mainly on whether the leukemia is acute (fast growing) or chronic (slower growing), and whether it starts in myeloid cells or lymphoid cells.

Acute myeloid leukemia (AML) starts in the bone marrow (the soft inner part of certain bones, where new blood cells are made), but most often it quickly moves into the blood, as well. It can sometimes spread to other parts of the body including the lymph nodes, liver, spleen, central nervous system (brain and spinal cord), and testicles.

Most often, AML develops from cells that would turn into white blood cells (other than lymphocytes), but sometimes AML develops in other types of blood-forming cells. The different types of AML are discussed in [Acute Myeloid Leukemia \(AML\) Subtypes and Prognostic Factors](#)².

Acute myeloid leukemia (AML) has many other names, including acute myelocytic leukemia, acute myelogenous leukemia, acute granulocytic leukemia, and acute non-lymphocytic leukemia.

Normal bone marrow, blood, and lymph tissue

To understand leukemia, it helps to know about the blood and lymph systems.

Bone marrow

Bone marrow is the soft inner part of certain bones. It is made up of blood-forming cells, fat cells, and supporting tissues. A small fraction of the blood-forming cells are **blood stem cells**.

Inside the bone marrow, blood stem cells develop into new blood cells. During this process, the cells become either lymphocytes (a kind of white blood cell) or other blood-forming cells, which are types of **myeloid cells**. Myeloid cells can develop into red blood cells, white blood cells (other than lymphocytes), or platelets. These myeloid cells are the ones that are abnormal in AML.

Types of blood cells

There are 3 main types of blood cells:

Red blood cells (RBCs) carry oxygen from the lungs to all other tissues in the

References

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Key Statistics for Acute Myeloid Leukemia (AML)

The American Cancer Society's estimates for acute myeloid leukemia (AML) in the United States for 2025 are:

- About 22,010 people will be diagnosed with AML. Most cases will be in adults.
- About 11,090 people will die from AML. Again, most of these deaths will be in adults.

AML accounts for about 1 out of 3 leukemias in adults. Still, AML isn't common, accounting for about 1% of all cancers overall.

[AML can occur in children¹](#), but it is uncommon in people under the age of 45. The average age of people when they are first diagnosed with AML is about 69.

AML is slightly more common among men than women, but the average lifetime risk of getting AML for both sexes is about ½ of 1%.

Information on treatment success rates for AML in adults can be found in [Treatment Response Rates for Acute Myeloid Leukemia](#)².

Visit the [American Cancer Society's Cancer Statistics Center](#)³ for more key statistics.

Hyperlinks

1. www.cancer.org/cancer/types/leukemia-in-children.html
www.cancer.org/cancer/types/acute-myeloid-leukemia/treating/response-rates.html

What's New in Acute Myeloid Leukemia (AML) Research?

Researchers continue to study the causes, diagnosis, and treatment of acute myeloid leukemia (AML) at many medical centers, university hospitals, and other institutions around the world.

[Chemotherapy](#)¹ (chemo) is still the main treatment for most types of AML.

Researchers are looking for the most effective combination of chemo drugs that will also limit unwanted side effects. This is especially important for older people who might not be able to tolerate the side effects of current treatments for AML.

The effectiveness of chemo may be limited in some cases because the leukemia cells can become resistant to it over time. Research is now looking at ways to prevent or reverse this resistance by using other drugs along with chemo. They are also looking at combining chemo with newer types of drugs to see if this might work better.

Stem cell transplants

Researchers continue to refine [stem cell transplants](#)² to try to increase their effectiveness, reduce complications, and determine which people are most likely to be helped by this treatment. Many studies are trying to determine exactly when autologous, allogeneic, and mini-transplants might best be used.

Targeted therapy drugs

Chemo drugs can help many people with AML, but these drugs don't always cure the disease. Newer [targeted drugs](#)³ that specifically attack some of the gene changes seen in AML cells have become an important part of treatment for some people. These drugs don't work the same way as standard chemo drugs. Some examples include:

FLT3 inhibitors: In some people with AML, the leukemia cells have a change (mutation) in the *FLT3* gene. Drugs called FLT3 inhibitors target AML cells with this gene change. FLT3 inhibitors such as midostaurin (Rydapt), quizartinib (Vanflyta), and gilteritinib (Xospata) are now approved to treat people whose AML cells have an *FLT3* mutation. Several other FLT3 inhibitors are now being studied as well.

IDH inhibitors: In some people with AML, the leukemia cells have a mutation in the *IDH1* or *IDH2* gene, which stops the cells from maturing properly. IDH inhibitors can help leukemia cells mature into normal blood cells. Some of these drugs, such as enasidenib (Idhifa), olutasidenib (Rezlidhia), and ivosidenib (Tibsovo), are now approved to treat AML with certain *IDH* gene mutations. Several other IDH inhibitors are now being studied as well.

BCL-2 inhibitors: Some people with AML have leukemia cells that make too much of a protein called BCL-2. Leukemia cells that have too much BCL-2 tend to be harder to kill with chemo drugs. BCL-2 inhibitors prevent the BCL-2 protein from working in cancer

cells. Venetoclax (Venclexta) is a BCL-2 inhibitor that has been approved to treat AML with too much BCL-2 protein. Several other BCL-2 inhibitors are being studied as well.

Researchers are also looking at newer types of targeted drugs to treat AML.

Immunotherapy drugs

Immunotherapy works to boost the body's immune system to help fight off or destroy cancer cells.

Bispecific antibodies: A bispecific antibody consists of two antibodies that each attach to a different target. Once inside the body, this type of drug can act as a link to bring two types of cells close together. One antibody is usually designed to attach to a target on the leukemia cell, while the other is designed to attach to a target on immune cells (for example, T cells). When the bispecific antibody brings the leukemia cell and immune cell together, the immune system is alerted and starts to fight the leukemia cell. Several bispecific antibodies are now being studied for use against AML.

Antibody-drug conjugates (ADC): An ADC is a drug with two parts: an **antibody** designed to attach to a surface protein on cancer cells and a **toxin** meant to kill the cancer cells. When ADCs are injected into the body, they act like a homing device, bringing the toxin directly to the cancer cells, which kills them. ADCs are already used to treat some types of cancer, and some ADCs are now being studied for use against AML.

Immune checkpoint inhibitors: An important part of the immune system is its ability to keep itself from attacking other normal cells in the body. To do this, it uses 'checkpoint' proteins on immune cells that need to be turned on (or off) to start an immune response. Cancer cells sometimes use these checkpoints to avoid being attacked by the immune system. Drugs called **immune checkpoint inhibitors** (ICIs) target these checkpoint proteins. They are already used in many other cancers, and they are now being studied for use in AML, especially combined with chemo or targeted therapy drugs.

Chimeric antigen receptor (CAR) T-cell therapy: For this treatment, immune cells called T cells are removed from the person's blood and altered in the lab so they have specific substances (called **chimeric antigen receptors**, or **CARs**) that will help them attach to leukemia cells. The T cells are then grown in the lab and infused back into the person's blood, where they can now seek out the leukemia cells and attack them.

This therapy has been shown to work in other types of blood cancers, although it's not yet clear if it will work against AML. Researchers are continuing to study how this therapy might be used to treat AML.

Hyperlinks

1. www.cancer.org/cancer/types/acute-myeloid-leukemia/treating/chemotherapy.html
2. www.cancer.org/cancer/types/acute-myeloid-leukemia/treating/bone-marrow-stem-cell-transplant.html
3. www.cancer.org/cancer/types/acute-myeloid-leukemia/treating/targeted-therapy.html

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