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About Chronic Lymphocytic Leukemia

Get an overview of chronic lymphocytic leukemia and the latest key statistics in the US.

Overview and Types

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

- [What Is Chronic Lymphocytic Leukemia?](#)

Research and Statistics

See the latest estimates for new cases of chronic lymphocytic leukemia and deaths in the US and what research is currently being done.

- [Key Statistics for Chronic Lymphocytic Leukemia](#)
- [What's New in Chronic Lymphocytic Leukemia Research and Treatment?](#)

What Is Chronic Lymphocytic Leukemia?

Chronic lymphocytic leukemia (CLL) is one the most common types of leukemia in adults. It's a type of cancer that starts in early forms of certain white blood cells (called **lymphocytes**) in the bone marrow. The cancer (leukemia) cells start in the bone

marrow but then go into the blood.

In CLL, the leukemia cells often build up slowly. Many people don't have any symptoms for at least a few years. But over time, the cells can build up and spread to other parts of the body, including the lymph nodes, liver, and spleen.

- [What is leukemia?](#)
- [What is a chronic leukemia?](#)
- [What is a lymphocytic leukemia?](#)
- [Not all chronic lymphocytic leukemia \(CLL\) is the same](#)
- [Rare forms of lymphocytic leukemia](#)

[What Is Cancer?](#) ¹

Cancer starts when cells in the body begin to grow out of control. Cells in nearly any part of the body can become cancer cells. Learn more here.

What is leukemia?

Leukemia is cancer that starts in the blood-forming cells of the bone marrow. When one of these cells changes and becomes a leukemia cell, it no longer matures the way it should and grows out of control. Often, it divides to make new cells faster than normal. Leukemia cells also don't die when they should. This allows them to build up in the bone marrow, crowding out normal cells.

At some point, leukemia cells leave the bone marrow and spill into the bloodstream. This increases the number of white blood cells in the blood. Once in the blood, leukemia cells can spread to other organs, where they can prevent other cells in the body from functioning normally.

Leukemia is different from other cancers that start in organs like the lungs, colon, or breast and then spread to the bone marrow. Cancers that start somewhere else and then spread to the bone marrow are not leukemia.

Knowing the exact [type of leukemia](#)² a person has helps doctors better predict their outlook and select the best treatment.

What is a chronic leukemia?

In a chronic leukemia, the leukemia cells can mature partly (and are more like normal white blood cells than the cells of acute leukemias), but they don't mature completely.

These cells may look fairly normal, but they're not. They generally don't fight infection as well as normal white blood cells do.

The leukemia cells survive longer than normal cells and build up, crowding out normal cells in the bone marrow.

1. www.cancer.org/cancer/understanding-cancer/what-is-cancer.html
2. www.cancer.org/cancer/types/leukemia.html
3. www.cancer.org/cancer/types/chronic-lymphocytic-leukemia/detection-diagnosis-staging/how-diagnosed.html
4. www.cancer.org/cancer/types/chronic-lymphocytic-leukemia/treating/treatment-by-risk-group.html
5. www.cancer.org/cancer/types/chronic-lymphocytic-leukemia/detection-diagnosis-staging/staging.html
6. www.cancer.org/cancer/types/chronic-lymphocytic-leukemia/treating/hairy-cell-leukemia.html

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Awan FT, Byrd JC. Chapter 99: Chronic lymphocytic leukemia. In: Niederhuber JE, Armitage JO, Doroshow JH, Kastan MB, Tepper JE, eds. *Abeloff's Clinical Oncology*. 6th ed. Philadelphia, Pa: Elsevier; 2020.

National Cancer Institute. Chronic Lymphocytic Leukemia Treatment (PDQ®)—Health Professional Version. 2024. Accessed at <https://www.cancer.gov/types/leukemia/hp/clk-treatment-pdq> on June 20, 2024.

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National Comprehensive Cancer Network, Clinical Practice Guidelines in Oncology (NCCN Guidelines®): Chronic Lymphocytic Leukemia/Small Lymphocytic Lymphoma, Version 3.2024. Accessed at <https://www.nccn.org> on June 20, 2024.

Last Revised: July 1, 2024

Normal Bone Marrow, Blood, and Lymphoid Tissue

[Bone marrow](#)

White blood cells help the body fight infections. Having too few white blood cells (*neutropenia*) lowers your immune system and can make you more likely to get an infection.

Types of white blood cells

Lymphocytes are mature, infection-fighting cells that develop from lymphoblasts, a type of blood stem cell in the bone marrow. Lymphocytes are the main cells that make up lymphoid tissue, a major part of the immune system. Lymphoid tissue is found in lymph nodes, the thymus gland, the spleen, the tonsils, and adenoids. It's also scattered throughout the digestive and respiratory systems and the bone marrow. The 2 main types of lymphocytes are:

- **B lymphocytes (B cells)** protect the body from invading germs by developing (maturing) into plasma cells, which make proteins called antibodies. The antibodies attach to the germs (bacteria, viruses, and fungi), which helps other white blood cells called granulocytes recognize and destroy them. B lymphocytes are the cells that most often develop into chronic lymphocytic leukemia (CLL) cells.
- **T lymphocytes (T cells)** can recognize cells infected by viruses and directly destroy these cells. They also help regulate the immune system.

Granulocytes are mature, infection-fighting cells that develop from myeloblasts, a type of blood forming cell in the bone marrow. Granulocytes have granules in them that look like spots under the microscope. These granules contain enzymes and other substances that can destroy germs, such as bacteria. The 3 types of granulocytes -- neutrophils, basophils, and eosinophils -- are distinguished under the microscope by the size and color of their granules.

Monocytes develop from blood-forming monoblasts in the bone marrow and are related to granulocytes. After circulating in the bloodstream for about a day, monocytes enter body tissues to become macrophages, which can destroy some germs by surrounding and digesting them. Macrophages also help lymphocytes recognize germs and start making antibodies to fight them.

Last Revised: May 10, 2018

Key Statistics for Chronic Lymphocytic Leukemia

The American Cancer Society's estimates for chronic lymphocytic leukemia (CLL) in the United States for 2024 are:

- About 20,700 new cases of CLL
- About 4,440 deaths from CLL

CLL accounts for about 1 in 3 new cases of leukemia in the US, and about 1% of cancers overall.

CLL is slightly more common among men than women, but the average lifetime risk of getting CLL for both sexes is about $\frac{1}{2}$ of 1%.

CLL mainly affects older adults. The average age of people when they are diagnosed is around 70 years. It's rarely seen in people under age 40, and it's extremely rare in

What's New in Chronic Lymphocytic Leukemia Research and Treatment?

Research on chronic lymphocytic leukemia (CLL) is being done in many university hospitals, medical centers, and other institutions around the world. Each year, scientists find out more about what causes the disease, how to test for it, and how to better treat it.

Most experts agree that treatment in a [clinical trial](#)¹ should be considered for any type or stage of CLL. This way people can get the best treatment available now and may also get the new treatments that are thought to be even better. Some of the new and promising treatments discussed here are only available in clinical trials.

- [Genetics of chronic lymphocytic leukemia \(CLL\)](#)
- [New medicines for chronic lymphocytic leukemia \(CLL\)](#)

Genetics of chronic lymphocytic leukemia (CLL)

Scientists are learning a lot about the gene and chromosome changes inside CLL cells that make them different from normal cells, and how these changes affect their growth and their responses to different treatments.

This type of information is being used to help know when treatment needs to be started, which treatments are most likely to work, and what a person's long-term outlook is likely to be.

It's also changing the way CLL is [treated](#)². Newer targeted drugs that focus on some of these gene changes have changed the way CLL is treated in recent years (see below).

As doctors learn more about the many gene changes that can take place in CLL cells, they're using this knowledge to break CLL into groups of sub-types. This could lead to better understanding of the many treatment outcomes seen in people with CLL today.

New medicines for chronic lymphocytic leukemia (CLL) It's306 agree that treatme

Targeted drugs

Newer, [targeted drugs](#)⁴ are an important part of treatment for most people with CLL. These medicines affect parts of the leukemia cells that make them different from normal cells. Doctors are now trying to figure out the best combinations and sequences for giving these drugs, and if some might work better in people whose CLL cells have certain gene or chromosome changes.

Many new targeted drugs are also being tested for use in CLL clinical trials.

Immunotherapy

These types of medicines help a person's immune system find and attack the leukemia cells. Some types of immunotherapy are [now being used to treat CLL](#)⁵, while many others are being studied.

CAR T-cell therapy

For [CAR \(chimeric antigen receptor\) T-cell therapy](#)⁶, a person's T cells, a type of white blood cell, are removed from their blood and then altered and grown (multiplied) in a lab. They're then put back in the person's bloodstream so they can find and destroy CLL cells in the body. These treatments may be an option for some people with CLL, typically after other treatments have been tried.

The use of [vaccines](#)⁹ as cancer treatment is a research interest in many different kinds of cancer. Instead of preventing cancer, these vaccines try to get the immune system to mount an attack against cancer cells in the body.

Some early studies are testing vaccines made from a person's CLL cells and a protein that boosts the immune system's ability to kill the CLL cells. These studies are still in early phases, and it will take time before we know whether vaccine therapy works.

Hyperlinks

1. www.cancer.org/cancer/managing-cancer/making-treatment-decisions/clinical-trials.html
2. www.cancer.org/cancer/types/chronic-lymphocytic-leukemia/treating.html
3. www.cancer.org/cancer/types/chronic-lymphocytic-leukemia/treating/chemotherapy.html
4. www.cancer.org/cancer/types/chronic-lymphocytic-leukemia/treating/targeted-therapy.html
5. www.cancer.org/cancer/types/chronic-lymphocytic-leukemia/treating/monoclonal-antibodies.html
6. www.cancer.org/cancer/managing-cancer/treatment-types/immunotherapy/car-t-cell1.html
7. www.cancer.org/cancer/types/chronic-lymphocytic-leukemia/treating/monoclonal-antibodies.html
8. www.cancer.org/cancer/managing-cancer/treatment-types/immunotherapy/monoclonal-antibodies.html
9. www.cancer.org/cancer/managing-cancer/treatment-types/immunotherapy/cancer-vaccines.html

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