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Blood Cancer

Chronic Lymphocytic Leukemia (CLL)

What is chronic lymphocytic leukemia (CLL)?

The most common type of leukemia, this slow-growing cancer is a blood and bone marrow disease. About 15,000 people in the United States are diagnosed with CLL each year, according to the American Cancer Society. Their prognosis depends on how advanced the cancer is when it is discovered, as well as the exact subtype of CLL. Depending upon the subtype, average five-year survival rates range from 50 to 80 percent.

Definitions

Chronic: Long lasting and recurring.

Lymphocytic:

Referring to lymphocytes, a type of white blood cell.

Malignant: Cancerous and capable of spreading.

Pathologist: A physician who examines tissues and fluids to diagnose disease in order to assist in making treatment decisions.

Subtype: A particular type of diagnosed illness; for example: a subtype of chronic lymphocytic leukemia.

Who is most likely to have CLL?

Middle-aged or older white males have the highest risk. Those who have previously had cancer of the lymphatic system, have a family history of CLL, and have Russian or Eastern European Jewish relatives also have increased risk.

What characterizes CLL?

CLL is characterized by stem cells in the bone marrow making too many lymphocytes. While lymphocytes help the body to fight infection when present in normal numbers, as they become too numerous, they begin to crowd out healthy white and red blood cells and platelets.

CLL usually does not present with obvious symptoms. However, consult a physician if you have painless swelling of the lymph nodes in the neck, underarm, or groin. Fatigue, fever, infection, and pain or fullness below the ribs are other potential signs of CLL.

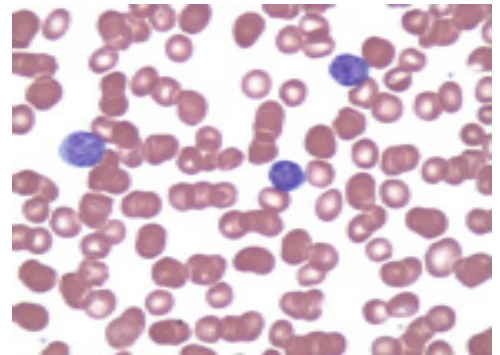
How does the pathologist make a diagnosis?

Your primary care physician conducts a physical exam and medical history. Depending on your symptoms, your physician may order a **complete blood count** so that the pathologist can measure the amount of red blood cells, white blood cells and platelets, as well as the amount of hemoglobin, which carries oxygen in the red blood cells.

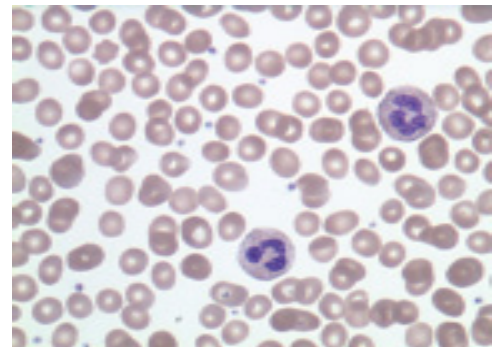
What else does the pathologist look for?

If necessary, your primary care physician or oncologist will obtain a **biopsy specimen**—a small piece of bone and bone marrow—by inserting a needle into your hipbone or breastbone. The pathologist examines this specimen under a microscope, looking for abnormal cells. **Cytogenetic analysis** may also be performed to look for chromosomal abnormalities associated with chronic lymphocytic leukemia. Another diagnostic test the pathologist conducts is **immunophenotyping**. During this test, the pathologist tests the specimen to see if the cancerous lymphocytes originate from B or T lymphocytes. **Molecular studies** can also be utilized to determine if the lymphocyte population is clonal (for example, all cells derived from a single cell and therefore constituting a tumor population). An **antiglobulin test** checks for antibodies on the surface of red blood cells or platelets; these antibodies can destroy these healthy cells.

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Chronic lymphocytic leukemia blood cells.



Normal blood cells.

What kinds of questions should I ask my doctors?

Ask any question you want. There are no questions you should be reluctant to ask. Here are a few to consider:

- Please describe the type of cancer I have and what treatment options are available.
- What is the stage of my cancer?
- What are the chances for full remission?
- What treatment options do you recommend? Why do you believe these are the best treatments?
- What are the pros and cons of these treatment options?
- What are the side effects?
- Should I receive a second opinion?
- Is your medical team experienced in treating the type of cancer I have?
- Can you provide me with information about the physicians and others on the medical team?

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To determine whether or not the cancer has spread, your physician may order a **chest x-ray or CT (computed tomography)** or **MRI scan** to better view bones, organs and tissues. **Blood chemistry studies** also may be ordered to measure the amounts of certain substances released into the blood by organs or tissues. Unusual amounts of a substance may be a sign of disease in the organ or tissue producing it.

With the results of all necessary tests, the pathologist can assign a **stage** to the cancer. At stage 0, there are too many lymphocytes in the blood. At stage 1, leukemia has begun to develop due to the many lymphocytes and the lymph nodes are enlarged. Stage 2 CLL begins to affect the size of the spleen and liver, and at stage 3, red blood cells begin to decrease. At stage 4, the number of platelets begins to decrease.

How do doctors determine what surgery or treatment will be necessary?

The pathologist consults with your primary care physician or oncologist after reviewing the test results. Together, using their combined experience and knowledge, they determine treatment options most appropriate for your condition. Important factors are the stage of the disease; your blood and platelet counts; what symptoms are present; and whether the liver, spleen, or lymph nodes are larger than normal.

What kinds of treatments are available for CLL?

Because CLL is a slow-growing cancer, **watchful waiting** may be appropriate for stage 0 cancers. The physician will treat any problems that arise due to your condition while monitoring your blood counts.

Radiation therapy uses high-energy, pinpointed x-rays to kill cancer cells. In some cases, the radiation is delivered via needles, seeds, wires, or catheters that are placed directly into or near the cancer. Radiation therapy is directed at specific areas or tumors, minimizing the damage to normal cells or tissue. This treatment also can be used to destroy cancer cells that remain after surgery.

Chemotherapy uses drugs to stop the growth of cancer cells. Systemic chemotherapy kills or stops cells from dividing throughout the body. Regional chemotherapy is directed at a specific part of the body, focusing the treatment there and sparing normal cells from damage.

Surgery is sometimes required to remove an enlarged spleen. This type of surgery is known as splenectomy.

Monoclonal antibody therapy treats the cancer with antibodies made in the laboratory from immune system cells. These antibodies identify substances that help cancer cells grow, attach to these substances, and kill and block the growth of cancer cells. This therapy is also used to deliver drugs, toxins, or radioactive material directly to cancer cells.

Now available as a treatment for CLL through clinical trials, **stem cell transplantation** allows your physician to provide more aggressive cancer-fighting treatment—higher-than-usual doses of chemotherapy, radiation therapy, or both. This aggressive hospital treatment kills both lymphocytic cells and normal blood cells in the bone marrow. After these cells have been destroyed, you receive healthy stem cells transplanted through a flexible tube placed in a large vein in your neck or chest area. New, healthy blood cells develop from the transplanted stem cells, which usually come from a healthy part of your body (autologous) or from a donor (allogeneic).

Clinical trials of new treatments for CLL may be found at www.cancer.gov/clinicaltrials. These treatments are highly experimental in nature but may be a potential option for advanced cancers. Some trials may involve biologic therapy, which uses the natural defenses of the immune system to fight cancer.

For more information, go to: www.cancer.gov (National Cancer Institute), www.cancer.org (American Cancer Society) or www.leukemia-lymphoma.org (Leukemia and Lymphoma Society). Type the keywords **chronic lymphocytic leukemia** into the search box.