

Leukemia - Eosinophilic - Diagnosis [1]

This section has been reviewed and approved by the [Cancer.Net Editorial Board \[2\]](#), 09/2015

ON THIS PAGE: You will find a list of the common tests, procedures, and scans that doctors can use to find out what's wrong and identify the cause of the problem. To see other pages, use the menu on the side of your screen.

Doctors use many tests to diagnose eosinophilia. Although a patient's signs and symptoms may cause a doctor to suspect eosinophilic leukemia, it is diagnosed only by testing a patient's blood and bone marrow. Some tests may also help doctors decide which treatments may be the most effective.

This list describes options for diagnosing eosinophilic leukemia, and not all tests listed will be used for every person. Your doctor may consider these factors when choosing a diagnostic test:

- Age and medical condition
- Type of leukemia suspected
- Signs and symptoms
- Previous test results

The main criteria for diagnosing eosinophilic leukemia are:

- An eosinophil count in the blood of 1.5×10^9 /L or higher that lasts over time
- No parasitic infection, allergic reaction, or other causes of eosinophilia
- Problems with the functioning of a person's organs because of the eosinophilia

In addition to a physical examination, the following tests may be used to diagnose eosinophilic leukemia:

- **Blood tests.** The diagnosis of eosinophilic leukemia begins with a test called a [complete blood count \(CBC\)](#) [3]. A CBC measures the number of different types of cells in a person's blood. If the blood contains many eosinophils (see criteria above), eosinophilic leukemia is suspected.
- **Bone marrow aspiration and biopsy.** A [bone marrow aspiration and biopsy](#) [4] are similar and often done at the same time to examine the bone marrow. Bone marrow has both a solid and liquid part. A bone marrow aspiration removes a sample of fluid with a needle. A bone marrow biopsy is the removal of a small amount of solid tissue using a needle. A pathologist then analyzes the sample(s) to determine the number and type of abnormal cells. A pathologist is a doctor who specializes in interpreting laboratory tests and evaluating cells, tissues, and organs to diagnose disease. A common site for a bone marrow aspiration and biopsy is the pelvic bone, which is located in the lower back by the hip. The skin in that area is usually numbed with medication beforehand, and other types of anesthesia (medication to block awareness of pain) may be used.

Many immature cells, called blasts, in the bone marrow are a sign of acute rather than chronic eosinophilic leukemia. Acute eosinophilic leukemia is not covered in this article and is treated similarly to [AML](#) [5].

- **Molecular testing.** Your doctor may recommend running laboratory tests on the eosinophils to identify specific genes, proteins, and other factors unique to the leukemia. If many eosinophils are found, a molecular genetic analysis should be done to test for a mutation that makes an abnormal protein known as FIP1-like-1/platelet-derived growth factor alpha. Two types of molecular testing may be used:
 - Immunophenotyping is the examination of the proteins on the surface of the leukemia cells and helps the doctor confirm the exact type of leukemia.

- Cytogenetics is the examination of the leukemia cells for abnormalities in the long strands of genes called chromosomes. It also helps the doctor confirm the diagnosis and may help to determine the person's chance of recovery.

Results of these tests will also help decide whether your treatment options include a type of treatment called targeted therapy (see [Treatment Options](#) [6]).

- **Computed tomography (CT or CAT) scan.** A [CT scan](#) [7] creates a three-dimensional picture of the inside of the body with an x-ray machine. A computer then combines these images into a detailed, cross-sectional view that shows any abnormalities or tumors. A CT scan also shows enlarged lymph nodes or a swollen spleen or liver, and can be used to measure the size of these organs. Sometimes, a special dye called a contrast medium is given before the scan to provide better detail on the image. This dye can be injected into a patient's vein or given as a pill to swallow.
- **Evaluation of the heart.** People who have many eosinophils for a long period of time often have problems with heart function and rhythm. The doctor may recommend an [electrocardiogram \(ECG or EKG\) and/or an echocardiogram \(ECHO\)](#) [8]. An EKG is a noninvasive test that looks for abnormal heart rhythms or heart damage. An ECHO is a noninvasive test that looks at the structure and function of the heart using sound waves and an electronic sensor.

After diagnostic tests are done, your doctor will review all of the results with you. If the diagnosis is eosinophilic leukemia, these results also help the doctor describe the disease.

The [next section in this guide is Stages](#) [9], and it explains the system doctors use to describe most cancers and how this differs for eosinophilic leukemia. Or, use the menu on the side of your screen to choose another section to continue reading this guide.

Links

[1] <http://www.cancer.net/cancer-types/leukemia-eosinophilic/diagnosis>

[2] <http://www.cancer.net/about-us>

[3] <http://www.cancer.net/node/24716>

[4] <http://www.cancer.net/node/24409>

[5] <http://www.cancer.net/node/31280>

[6] <http://www.cancer.net/node/18762>

[7] <http://www.cancer.net/node/24486>

[8] <http://www.cancer.net/node/24509>

[9] <http://www.cancer.net/node/18761>