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About Chronic Myelomonocytic Leukemia

Overview of CMML

If you have been diagnosed with chronic myelomonocytic 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 Myelomonocytic Leukemia?](#)

Research and Statistics

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

- [What Are the Key Statistics About Chronic Myelomonocytic Leukemia?](#)
 - [What's New in Chronic Myelomonocytic Leukemia Research and Treatment?](#)
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What Is Chronic Myelomonocytic Leukemia?

Chronic myelomonocytic leukemia (CMML) starts in blood-forming cells in the bone marrow and invades the blood.

Cells in nearly any part of the body can become cancer and can spread to other areas of the body. To learn more about how cancers start and spread, see [What Is Cancer?](#)¹

Normal bone marrow

Bone marrow is found inside certain bones such as the skull, ribs, pelvis, and spine. It's made up of blood-forming cells, fat cells, and supporting tissues that help the blood-forming cells grow. A small fraction of the blood-forming cells are a special type of cell known as **stem cells**. Stem cells are needed to make new cells. When a stem cell divides, it makes 2 cells: one cell that stays a stem cell and another cell that can keep changing and dividing to make blood cells.

There are 3 types of [blood cells](#)²: red blood cells, white blood cells, and platelets.

Red blood cells pick up oxygen in the lungs and carry it to the rest of the body. These cells also bring carbon dioxide back to the lungs. Having too few red blood cells is called [anemia](#)³. People with anemia can look pale and feel tired and weak. Severe anemia can cause shortness of breath.

White blood cells (also called *leukocytes*) are important in fighting [infection](#)⁴.

- Lymphocytes are immune cells in the bone marrow, the blood, and in [lymph nodes](#)⁵. Some kinds of lymphocytes make the antibodies that help your body fight germs. Other kinds directly kill invading germs by making toxic substances that damage the cells.
- Granulocytes are white blood cells that destroy bacteria. They contain granules that are made up of enzymes and other substances which can destroy germs that cause infections. In the bone marrow, granulocytes develop from young cells called myeloblasts. The most common type of granulocyte is the neutrophil; which is crucial in fighting bacteria. Other types of granulocytes are basophils, and eosinophils. When the number of neutrophils in the blood is low, it is called **neutropenia**. This can lead to severe infections.
- Monocytes are related to the granulocyte family. They also help protect you against bacteria. The early cells in the bone marrow that turn into monocytes are called monoblasts. When monocytes leave your bloodstream and go into tissue, they become macrophages. Macrophages can destroy germs by surrounding and digesting them. They're also important in helping lymphocytes recognize germs and start making antibodies to fight them.

Platelets are thought of as a type of blood cell, but they're really small pieces of a cell. They start as a large cell in the bone marrow called the megakaryocyte. Pieces of this cell break off and enter your bloodstream as platelets, which you need for your blood to clot. Platelets plug up damaged areas of blood vessels caused by cuts or bruises. If you have a shortage of platelets (a condition called thrombocytopenia) you can bleed and bruise a lot.

Features of chronic myelomonocytic leukemia

- People with CMML may have shortages of some blood cells, but a main problem is **too many monocytes**. (at least 1,000 per mm³). Often, the monocyte count is much higher, causing their total white blood cell count to become very high as well.
- Usually there are some abnormal cells, called blasts, in the bone marrow. The amount of blasts in CMML is below 20%.
- Many people with CMML have enlarged spleens (an organ that lies just below the left rib cage).
- About 15% to 30% of people with CMML go on to develop [acute myeloid leukemia](#)⁶.
- The DNA inside the abnormal cells does not have certain changes in the genes called BCR/ABL (philadelphia chromosome), or PDGFRA and PDGFRB. For more information about these gene changes, see [How is CMML diagnosed?](#)⁷

Since CMML has features of both a [myelodysplastic syndrome](#)⁸ and myeloproliferative neoplasm, experts created a new category for it: **myelodysplastic/myeloproliferative neoplasm** (myelo -- bone marrow, proliferative -- excessive growth, dysplastic -- abnormal looking). CMML is the most common disease in this group. Much less common diseases in this group are atypical chronic myeloid leukemia and juvenile myelomonocytic leukemia. All of these diseases produce a lot of abnormal blood cells.

[Chronic myeloid leukemia](#)⁹ is an example of a myeloproliferative neoplasm where there is an over-production of white blood cells.

Hyperlinks

1. www.cancer.org/cancer/cancer-basics/what-is-cancer.html
2. www.cancer.org/treatment/understanding-your-diagnosis/tests/understanding-your-lab-test-results.html
3. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/low-blood-counts/anemia.html
4. www.cancer.org/treatment/treatments-and-side-effects/physical-side-

- [effects/infections.html](#)
5. www.cancer.org/cancer/cancer-basics/lymph-nodes-and-cancer.html
 6. www.cancer.org/cancer/acute-myeloid-leukemia.html
 7. https://author-prod.cancer.org/editor.html/content/launches/2017/10/24/2017_review_-_cmml-copyedit/content/launches/2017/09/19/2017_review_-_cmml/content/cancer/en/cancer/chronic-myelomonocytic-leukemia/detection-diagnosis-staging/how-diagnosed.html
 8. www.cancer.org/cancer/myelodysplastic-syndrome.html
 9. www.cancer.org/cancer/chronic-myeloid-leukemia.html

References

See all references for Chronic Myelomonocytic Leukemia
(www.cancer.org/cancer/chronic-myelomonocytic-leukemia/references.html)

National Cancer Institute. Chronic Myelodysplastic/Myeloproliferative Neoplasms treatment (PDQ) - Patient Version. August 12, 2015.

Last Medical Review: September 28, 2017 Last Revised: October 25, 2017

What Are the Key Statistics About Chronic Myelomonocytic Leukemia?

Chronic myelomonocytic leukemia (CMML) is rare, only occurring in 4 of every million people in the United States each year. That works out to about 1,100 cases each year.

This disease is rare in young people. Almost 9 of 10 of cases are diagnosed in people 60 and older. CMML occurs more often in men than in women.

Visit the [American Cancer Society's Cancer Statistics Center](#)¹ for more key statistics.

Hyperlinks

1. <https://cancerstatisticscenter.cancer.org/>

References

See all references for Chronic Myelomonocytic Leukemia

(www.cancer.org/cancer/chronic-myelomonocytic-leukemia/references.html)

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

Genetics

Research on the [causes](#)¹, [diagnosis](#)², and [treatment](#)³ of chronic myelomonocytic leukemia (CMML) is being done at many cancer research centers. Scientists are making progress in understanding which changes in a person's DNA and RNA can cause normal bone marrow cells to develop into leukemia cells.

Studies have found that changes in the structure or activity of certain [genes](#)⁴ in CMML cells may help predict patients' outcomes and how likely they are to go on to develop acute leukemia. Research continues in this area, and someday, this information may help guide treatment decisions.

As more information from this research unfolds, it may be used in designing new drugs or developing gene therapy. This approach replaces the abnormal DNA of cancer cells with normal DNA to restore normal control of cell growth.

Chemotherapy

Studies are in progress to find the best combination of chemotherapy drugs while trying to limit side effects. New drugs are continually being developed and tested.

As researchers have learned more about what makes cancer cells different from normal

cells, they've begun to develop drugs that target these differences. Studies are looking at [targeted therapies](#)⁵ to treat CMML. These therapies target things like specific cell signaling pathways to shut down cancer cell growth. Some of these drugs are already being used to treat other cancers.

Stem cell transplant

Scientists continue to refine this procedure so that it works better and causes fewer problems. They are also looking at which patients will benefit the most and how [newer transplant methods](#)⁶ might be used to treat CMML.

Hyperlinks

1. www.cancer.org/cancer/chronic-myelomonocytic-leukemia/causes-risks-prevention/what-causes.html
2. www.cancer.org/cancer/chronic-myelomonocytic-leukemia/detection-diagnosis-staging/how-diagnosed.html
3. www.cancer.org/cancer/chronic-myelomonocytic-leukemia/treating.html
4. www.cancer.org/cancer/cancer-causes/genetics/genes-and-cancer.html
5. www.cancer.org/treatment/treatments-and-side-effects/treatment-types/targeted-therapy.html
6. www.cancer.org/treatment/treatments-and-side-effects/treatment-types/stem-cell-transplant.html

References

See all references for Chronic Myelomonocytic Leukemia

(www.cancer.org/cancer/chronic-myelomonocytic-leukemia/references.html)

Benton CB, Nazha A, Pemmaraju N, Garcia-Manero G. Chronic myelomonocytic leukemia: Forefront of the field in 2015. *Crit Rev Oncol Hematol*. 2015;95(2):222-242.

Patnaik MM, Tefferi A. Chronic myelomonocytic leukemia: 2016 update on diagnosis, risk stratification, and management. *Am J Hematol*. 2016;91(6):631-642.

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Chronic Myelomonocytic Leukemia Causes, Risk Factors, and Prevention

Risk Factors

A risk factor is anything that affects your chance of getting a disease such as cancer. Learn more about the risk factors for chronic myelomonocytic leukemia.

- [What Are the Risk Factors for Chronic Myelomonocytic Leukemia?](#)
- [Do We Know What Causes Chronic Myelomonocytic Leukemia?](#)

Prevention

There is no way to prevent most cases of CMML. Rarely, CMML is caused by chemotherapy and radiation treatments for other cancers. Doctors are studying ways to minimize the risk for patients receiving these treatments by avoiding the chemotherapy drugs that are more likely to lead to CMML.

What Are the Risk Factors for Chronic Myelomonocytic Leukemia?

A risk factor is anything that changes your chance of getting a disease such as cancer. Different cancers have different risk factors. For example, exposing skin to strong sunlight is a risk factor for skin cancer. Smoking is a risk factor for lung cancer and many other cancers. But people without any risk factors can still get the disease. And

having a risk factor, or even several, does not mean that you will get the disease. Because chronic myelomonocytic leukemia (CMML) is rare, it has been hard to study. For a long time it was grouped with [myelodysplastic syndrome](#)¹s. As a result, only a few risk factors are known for this disease.

Age

The risk of CMML increases with age. This disease is rare in those younger than 40, with most cases found in people 60 and older.

Sex

CMML is about twice as common in men as in women.

Cancer treatment

Prior treatment with [chemotherapy](#)² seems to increase the risk of CMML. The risk of CMML after cancer chemotherapy, however, is not as high as the risk of other blood problems, such as myelodysplastic syndromes and acute myeloid leukemia. [Second Cancers in Adults](#)³ has more information on this.

Hyperlinks

1. www.cancer.org/cancer/myelodysplastic-syndrome.html
2. www.cancer.org/treatment/treatments-and-side-effects/treatment-types/chemotherapy.html
3. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/second-cancers-in-adults.html

References

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Do We Know What Causes Chronic Myelomonocytic Leukemia?

Some cases of chronic myelomonocytic leukemia (CMML) are linked to cancer treatment, but in most cases the cause is unknown.

Over the past few years, scientists have made progress in understanding how certain changes in the DNA of bone marrow cells may cause CMML to develop. DNA is the chemical that carries the instructions for nearly everything our cells do. We usually look like our parents because they are the source of our DNA. However, DNA affects more than the way we look.

Some genes (parts of DNA) control a cell's growth and division process. Genes that promote cell division are called *oncogenes*. Other genes called *tumor suppressor genes* can slow down cell division or even make cells die at an appropriate time. Cancers can be caused by DNA mutations (gene defects) that turn on oncogenes or turn off tumor suppressor genes.

In some diseases, mutations may be passed down from a parent. Inherited mutations do not seem to cause CMML. Instead, the mutations are acquired during the person's lifetime. Exposure to radiation or cancer-causing chemicals can cause mutations that lead to CMML. Sometimes these gene changes occur for no apparent reason. Every time a cell prepares to divide into 2 new cells, it must copy its DNA. This process is not perfect, and copying errors can occur. Fortunately, cells have repair enzymes that read and fix DNA. However, some errors may slip past, especially if the cells are growing rapidly.

Human DNA is packaged in 23 pairs of chromosomes. In up to half of patients, CMML cells contain altered chromosomes. Sometimes part of one chromosome attaches to a different chromosome. This is called a *translocation*. Like mutations, translocations can turn on oncogenes or turn off tumor suppressor genes. Acquired translocations are seen in some cases of CMML. Another chromosome abnormality that can be seen in CMML is called a deletion. This involves the loss of all or part of a chromosome. Another type of chromosome abnormality is called a *duplication*. This is when there is an extra copy of all or part of a chromosome.

References

See all references for Chronic Myelomonocytic Leukemia

www.cancer.org/cancer/chronic-myelomonocytic-leukemia/references.html

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Can Chronic Myelomonocytic Leukemia Be Prevented?

Since most cases of chronic myelomonocytic leukemia (CMML) have no known cause, this disease can rarely be prevented.

Treating cancer with chemotherapy and radiation may cause CMML. Doctors are studying ways to minimize the risk of CMML developing in patients receiving these treatments. In some cancers, doctors may try to avoid using the chemotherapy drugs that are more likely to lead to CMML. For certain cancers, however, these drugs may be needed. Often, the obvious benefits of treating life-threatening cancers with chemotherapy and radiation therapy must be balanced against the small chance of developing CMML several years later.

References

See all references for Chronic Myelomonocytic Leukemia

www.cancer.org/cancer/chronic-myelomonocytic-leukemia/references.html

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Chronic Myelomonocytic Leukemia

Early Detection, Diagnosis, and Staging

Detection and Diagnosis

Catching cancer early often allows for more treatment options. Some early cancers may have signs and symptoms that can be noticed, but that is not always the case.

- [Signs and Symptoms of Chronic Myelomonocytic Leukemia](#)
- [How Is Chronic Myelomonocytic Leukemia Diagnosed?](#)

Stages and Outlook (Prognosis)

After a cancer diagnosis, staging provides important information about the extent of cancer in the body and anticipated response to treatment.

- [How Is Chronic Myelomonocytic Leukemia Staged?](#)
- [Survival Rates for Chronic Myelomonocytic Leukemia](#)

Questions to Ask About CMML

Here are some questions you can ask your cancer care team to help you better understand your CMML diagnosis and treatment options.

- [Questions to Ask Your Doctor About Chronic Myelomonocytic Leukemia](#)
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Signs and Symptoms of Chronic Myelomonocytic Leukemia

The most common sign of chronic myelomonocytic leukemia (CMML) is having too many monocytes (seen on a blood test).

Having too many monocytes also causes many of the symptoms of CMML. These monocytes can settle in the spleen or liver, enlarging these organs. An enlarged spleen (called splenomegaly) can cause pain in the upper left part of the belly (abdomen). It can also cause people to notice they feel full too fast when they eat. If the liver gets too big (called hepatomegaly), it causes discomfort in the upper right part of the abdomen.

[Low numbers of other types of blood cells](#)¹ cause many of the signs and symptoms of CMML:

- A shortage of red blood cells (anemia) can lead to feeling very tired, with shortness of breath and pale skin.
- Not having enough normal white blood cells (leukopenia) can lead to frequent or severe [infections](#)².
- A shortage of blood platelets (thrombocytopenia) can lead to easy bruising and bleeding. Some people notice frequent or severe nosebleeds or bleeding from their gums.

Other symptoms can include weight loss, fever, and loss of appetite. Of course, many of these problems are caused more often by something other than cancer. If you're having symptoms, you should see a doctor so a cause can be found.

Hyperlinks

1. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/low-blood-counts.html
2. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/infections.html

References

See all references for Chronic Myelomonocytic Leukemia

www.cancer.org/cancer/chronic-myelomonocytic-leukemia/references.html

Myelodysplastic/Myeloproliferative Neoplasms Treatment (PDQ) - Patient Version. August 12, 2015. Accessed on October 4, 2017 at www.cancer.gov/types/myeloproliferative/patient/mds-mpd-treatment-pdq#section/_278.

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How Is Chronic Myelomonocytic Leukemia Diagnosed?

If [signs and symptoms](#) suggest you may have chronic myelomonocytic leukemia (CMML), the doctors will look at cells from your blood and bone marrow to confirm this diagnosis.

Blood tests

The [complete blood count](#)¹ (CBC) measures different cells in the blood, such as the red blood cells, the white blood cells, and the platelets. The CBC is often done with a differential count (or “diff”), which is a count of the different types of white blood cells in the blood sample. In a blood smear, some of the blood is put on a slide to see how the cells look under the microscope.

People with CMML have higher numbers of monocytes, (at least 1,000 per mm³). Sometimes they have low numbers of other white blood cells. They may have shortages of red blood cells and blood platelets, as well.

Some patients have a small number of monoblasts in the blood. Monoblasts are the early, immature cells that grow and divide to make mature monocytes. Normally, these cells are only found in the bone marrow. It's never normal to see blasts in the blood, and it's often a sign of a bone marrow problem.

Blood cells from CMML patients may also have certain changes in size, shape, or other features that can be seen under the microscope. Blood abnormalities may suggest CMML, but an exact diagnosis cannot be made without looking at and testing cells taken from the bone marrow.

Other blood tests may be done to check for other possible causes of low blood counts, such as low levels of vitamin B12 and folate. Tests may also be done to look for other causes of a high white blood cell count, such as an infection.

Bone marrow tests

Samples of your bone marrow are taken by bone marrow aspiration and biopsy for testing. The samples are usually taken from the back of the pelvic (hip) bone. These tests are used to diagnosis and classify the type of blood cancer you have. They may be repeated later to see if treatment is working or to see if the CMML is transforming into an acute leukemia.

For bone marrow aspiration, you lie flat on a table (either on your side or on your belly). After cleaning the skin over the hip, the surface of the bone is numbed with local anesthetic. A very thin needle is used to put in the numbing drug, which may cause a brief stinging or burning sensation. A long, hollow needle is then put into the bone and a syringe is used to suck out a small amount of liquid bone marrow (about 1 teaspoon). Even with the anesthetic, most patients still have some brief pain when the marrow is removed.

A bone marrow biopsy is usually done right after the aspiration. A small core of bone and marrow (about 1/16 inch in diameter and 1/2 inch long) is removed with a wider needle that's twisted as it's pushed into the hip bone. The biopsy may also cause some brief pain. Once the biopsy is done, pressure will be held to help prevent bleeding and bruising.

A pathologist(a doctor specializing in the diagnosis of diseases using laboratory tests) examines the bone marrow samples under a microscope. A hematologist(a doctor specializing in medical treatment of diseases of the blood and blood-forming tissues) or an oncologist(a doctor specializing in medical treatment of cancer) usually looks at the samples too.

Looking at the cells in the bone marrow

The doctors will look at the types and number of blood-forming cells in the bone marrow aspirate and biopsy. They will also check to see if the bone marrow shows signs of infections, cancer cells, or other disorders. They will examine the size and shape of the cells and determine whether the red cells contain iron particles or the other cells contain granules (microscopic collections of enzymes and other chemicals that help white blood cells to fight infections).

Measuring blasts

Tests will be done to measure the percentage of marrow cells that are blasts. This is very important. Blasts are very early (immature) cells that are made by bone marrow stem cells. Over time, blasts mature into normal blood cells. But in CMML, some of the blasts do not mature properly, so there may be too many blasts and not enough mature cells. **For a diagnosis of CMML, there must be less than 20% blasts in the bone marrow.** A patient who has more than 20% blasts in the bone marrow has [acute leukemia](#)².

Cytogenetic tests

This test looks at the chromosomes inside the cells. DNA in human cells is packed into chromosomes. Each cell should have 46 chromosomes (23 pairs). Chromosome changes or abnormalities are fairly common in CMML. Sometimes pieces of chromosomes or even whole chromosomes are missing. CMML cells may also have extra copies of all or part of some chromosomes. Chromosome translocations may also be seen. This is where parts of chromosomes trade places with each other.

Chromosome testing can also help the doctors be sure that the problem isn't a different leukemia, called [chronic myeloid leukemia or CML](#)³. The leukemia cells in CML often contain an abnormal chromosome caused by a certain translocation. This is called the **Philadelphia chromosome or BCR/ABL fusion**. If the Philadelphia chromosome is present, the diagnosis is CML, not CMML. CMML also does not have changes in certain genes, called PDGFRA and PDGFRB. If these changes are present the problem might be a different myeloproliferative disorder.

Cytogenetic testing can take several weeks because the bone marrow cells need time to grow in laboratory dishes before the chromosomes can be seen with a microscope. The results of cytogenetic testing are written in a way that describes which chromosome changes are present. For instance:

- **A minus sign (-) or the abbreviation "del" is used to mean a deletion.** So, if a copy of chromosome 7 is missing, it can be written as -7 or del(7). Often, only a part of the chromosome is lost. There are 2 parts to a chromosome, called p and q. So the loss of the q part of chromosome 20 is called 20q- or del(20q).
- **A plus sign (+) is used when there is an extra copy of all or part of a chromosome.** For example, +8 means that chromosome 8 has been duplicated and too many copies of it are in the cell.
- **The letter "t" is used to indicate a translocation, which is when a piece of one chromosome breaks off and becomes part of another chromosome.**

Other tests

These are other bone marrow tests that help the doctor diagnose CMML and rule out other blood diseases:

- [Immunocytochemistry](#)⁴. This testing is helpful in distinguishing CMML from other types of leukemia and from other diseases.
- [Flow cytometry](#)⁵. This test isn't needed for all patients, but it can be very helpful in diagnosing leukemia and lymphoma.
- [Molecular genetic tests](#)⁶. These tests are not needed to diagnose CMML, but they may be used in some cases

These tests can be done on cells besides bone marrow cells, such as cells from the blood.

Hyperlinks

1. www.cancer.org/treatment/understanding-your-diagnosis/tests/understanding-your-lab-test-results.html
2. www.cancer.org/cancer/leukemia.html
3. www.cancer.org/cancer/chronic-myeloid-leukemia.html
4. www.cancer.org/treatment/understanding-your-diagnosis/tests/testing-biopsy-and-cytology-specimens-for-cancer/special-tests.html
5. www.cancer.org/treatment/understanding-your-diagnosis/tests/testing-biopsy-and-cytology-specimens-for-cancer/special-tests.html
6. www.cancer.org/treatment/understanding-your-diagnosis/tests/testing-biopsy-and-cytology-specimens-for-cancer/special-tests.html

References

See all references for Chronic Myelomonocytic Leukemia

www.cancer.org/cancer/chronic-myelomonocytic-leukemia/references.html

National Cancer Institute. Myelodysplastic/Myeloproliferative Neoplasms Treatment (PDQ) - Patient Version. August 12, 2015.

Nazha A, Prebet T, Gore S, Zeidan AM. Chronic myelomonocytic leukemia: Are we finally solving the identity crisis? *Blood Rev.* 2016;30(5):381-388.

Patnaik MM, Tefferi A. Chronic myelomonocytic leukemia: 2016 update on diagnosis, risk stratification, and management. *Am J Hematol.* 2016;91(6):631-642.

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How Is Chronic Myelomonocytic Leukemia Staged?

Doctors often group cancers into different stages based on the size of the tumor and how far the cancer has spread from the original site in the body. The stage of a cancer can help predict the outlook for a cancer. Often, the stage of a cancer is used to decide which treatment is needed.

Chronic myelomonocytic leukemia (CMML) is a disease of the bone marrow. It cannot be staged by looking at the size of a tumor like some other cancers. Instead, CMML is split into 2 groups based on cell counts in the blood and bone marrow:

- **CMML-1:** Blasts make up less than 5% of white cells in the blood and less than 10% of the cells in the bone marrow.
- **CMML-2:** Blasts make up 5% to 20% of the white cells in the blood, or they make up 10% to 20% of the cells in the bone marrow.

References

See all references for Chronic Myelomonocytic Leukemia

www.cancer.org/cancer/chronic-myelomonocytic-leukemia/references.html

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Survival Rates for Chronic Myelomonocytic Leukemia

There is more than one way to describe a person's likely prognosis (outlook). The statistics below talk about median survival. Median survival is the amount of time for half the patients in a group to die. This is a middle value -- half the patients live longer than this, and half do not live this long.

In order to get median survival estimates, doctors have to look at people who were treated several years ago. Improvements in treatment since then may result in a more favorable outlook for people now being diagnosed with chronic myelomonocytic leukemia (CMML).

Median survival estimates are based on previous outcomes of large numbers of people who had the disease, but they cannot predict what will happen in any particular person's case. Many other factors may affect a person's outlook, such as their age and overall health. Your doctor can tell you how the numbers below may apply to you, as he or she is familiar with the aspects of your particular situation.

Patients with CMML-1 tend to live longer than those with CMML-2. In one study of CMML patients diagnosed between 1975 and 2005, the median survival times with CMML-1 and CMML-2 were 20 months and 15 months, respectively. However, some patients lived much longer. About 20% of CMML-1 patients and about 10% of CMML-2 patients survived longer than 5 years. Also, patients with CMML-2 are more likely to go on to develop acute leukemia than patients with CMML-1. In the same study, 18% of CMML-1 patients and 63% of CMML-2 patients developed acute myeloid leukemia within 5 years of their CMML diagnosis.

In addition to the type of CMML, other factors may be helpful in predicting survival. These include blood cell counts, certain chromosome changes, and blood levels of LDH (lactate dehydrogenase).

References

See all references for Chronic Myelomonocytic Leukemia
(www.cancer.org/cancer/chronic-myelomonocytic-leukemia/references.html)

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Questions to Ask Your Doctor About Chronic Myelomonocytic Leukemia

It is important to have frank, open, and honest discussions with your doctor about your condition. Your doctor and the rest of the health care team want to answer all of your questions. For instance, consider these questions:

- What are my treatment choices?
- Which treatment, if any, do you recommend, and why?
- Do the treatments you recommend have side effects?
- How can I help reduce the treatment side effects I might have?
- What is the outlook for my survival?
- Should I get a second opinion, and who do you recommend as an expert in this disease?

References

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Treating Chronic Myelomonocytic Leukemia

If you've been diagnosed with chronic myelomonocytic leukemia (CMML), your treatment team will discuss your options with you. It's important to weigh the benefits of each treatment option against the possible risks and side effects.

How is CMML treated?

Treatment for CMML may include:

- [Supportive Therapy for the Patient With Chronic Myelomonocytic Leukemia](#)
- [Chemotherapy for Chronic Myelomonocytic Leukemia](#)
- [Growth Factors for Treating Chronic Myelomonocytic Leukemia](#)
- [Radiation Therapy for Chronic Myelomonocytic Leukemia](#)
- [Surgery for Chronic Myelomonocytic Leukemia](#)
- [Stem Cell Transplant for Chronic Myelomonocytic Leukemia](#)

Common treatment approaches

Treatment of CMML is based on how severe the disease is, as well as your age and overall health. For many people with CMML, supportive therapy to prevent the problems caused by low blood cell counts is an important part of treatment.

- [General Approach to Treatment of Chronic Myelomonocytic Leukemia](#)

Who treats CMML?

Based on your treatment options, you might have different types of doctors on your

treatment team. These doctors could include:

- A **hematologist**: a doctor who treats blood disorders.
- A **radiation oncologist**: a doctor who treats cancer with radiation therapy
- A **medical oncologist**: a doctor who treats cancer with medicines such as chemotherapy
- A **surgical oncologist (oncologic surgeon)**: a doctor who uses surgery to treat cancer

You might have many other specialists on your treatment team as well, including physician assistants, nurse practitioners, nurses, nutrition specialists, social workers, and other health professionals.

- [Health Professionals Associated With Cancer Care¹](#)

Making treatment decisions

It's important to discuss all treatment options, including their goals and possible side effects, with your doctors to help make the decision that best fits your needs. You may feel that you need to make a decision quickly, but it's important to give yourself time to absorb the information you have learned. Ask your cancer care team questions.

If time permits, it is often a good idea to seek a second opinion. A second opinion can give you more information and help you feel more confident about the treatment plan you choose.

- [Questions to Ask Your Doctor About Chronic Myelomonocytic Leukemia²](#)
- [Seeking a Second Opinion³](#)

Thinking about taking part in a clinical trial

Clinical trials are carefully controlled research studies that are done to get a closer look at promising new treatments or procedures. Clinical trials are one way to get state-of-the-art cancer treatment. In some cases they may be the only way to get access to newer treatments. They are also the best way for doctors to learn better methods to treat cancer. Still, they're not right for everyone.

If you would like to learn more about clinical trials that might be right for you, start by asking your doctor if your clinic or hospital conducts clinical trials.

- [Clinical Trials⁴](#)

Considering complementary and alternative methods

You may hear about alternative or complementary methods that your doctor hasn't mentioned to treat your cancer or relieve symptoms. These methods can include vitamins, herbs, and special diets, or other methods such as acupuncture or massage, to name a few.

Complementary methods refer to treatments that are used along with your regular medical care. Alternative treatments are used instead of a doctor's medical treatment. Although some of these methods might be helpful in relieving symptoms or helping you feel better, many have not been proven to work. Some might even be harmful.

Be sure to talk to your cancer care team about any method you are thinking about using. They can help you learn what is known (or not known) about the method, which can help you make an informed decision.

- [Complementary and Alternative Medicine⁵](#)

Help getting through cancer treatment

Your cancer care team will be your first source of information and support, but there are other resources for help when you need it. Hospital- or clinic-based support services are an important part of your care. These might include nursing or social work services, financial aid, nutritional advice, rehab, or spiritual help.

The American Cancer Society also has programs and services – including rides to treatment, lodging, and more – to help you get through treatment. Call our National Cancer Information Center at 1-800-227-2345 and speak with one of our trained specialists.

- [Find Support Programs and Services in Your Area⁶](#)

Choosing to stop treatment or choosing no treatment at all

For some people, when treatments have been tried and are no longer controlling the cancer, it could be time to weigh the benefits and risks of continuing to try new treatments. Whether or not you continue treatment, there are still things you can do to help maintain or improve your quality of life.

Some people, especially if the cancer is advanced, might not want to be treated at all. There are many reasons you might decide not to get cancer treatment, but it's important to talk to your doctors and you make that decision. Remember that even if you choose not to treat the cancer, you can still get supportive care to help with pain or other symptoms.

- [If Cancer Treatments Stop Working](#)⁷
- [Palliative or Supportive Care](#)⁸

The treatment information given here is not official policy of the American Cancer Society and is not intended as medical advice to replace the expertise and judgment of your cancer care team. It is intended to help you and your family make informed decisions, together with your doctor. Your doctor may have reasons for suggesting a treatment plan different from these general treatment options. Don't hesitate to ask him or her questions about your treatment options.

Supportive Therapy for the Patient With Chronic Myelomonocytic Leukemia

Chronic myelomonocytic leukemia (CMML) can be hard to treat. For many people with CMML, the main goal is to prevent the problems caused by low blood cell counts. For instance, [low red blood cell counts](#)¹ (anemia) can cause severe fatigue. Treating the anemia with [blood transfusions](#)² and/or [erythropoietin](#) can help patients feel better and allow them to be more active.

Some people are concerned about a slight risk of infection (hepatitis or HIV) spread by blood transfusion. This possibility is very unlikely, and the benefits of the transfused cells greatly outweigh this risk.

People with CMML often need a lot of blood transfusions. This can cause excess iron to build up in the body. This extra iron can deposit in the liver and heart, affecting how well the organs work. This iron build up is usually seen only in people who receive many transfusions over a period of years. Drugs called chelating agents can be used to treat and prevent iron overload from transfusions. Chelating agents are substances that bind with iron so that the body can get rid of it. They can be given intravenously (IV) or as an injection (shot) under the skin.

CMML patients with bleeding problems caused by a shortage of platelets may benefit from platelet transfusions.

People with CMML tend to get infections very easily. They should be especially careful to avoid cuts and scrapes and care for any injury right away. They should tell their doctors about any fever, signs of pneumonia (cough, shortness of breath), urinary infection (burning when urinating), or other signs of infection right away. Doctors will treat any known or suspected infections with antibiotics. See [Infections in People with Cancer](#)³ for more details.

Hyperlinks

1. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/low-blood-counts.html
2. www.cancer.org/treatment/treatments-and-side-effects/treatment-types/blood-transfusion-and-donation.html
3. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/infections.html

References

See all references for Chronic Myelomonocytic Leukemia

www.cancer.org/cancer/chronic-myelomonocytic-leukemia/references.html

Nazha A, Prebet T, Gore S, Zeidan AM. Chronic myelomonocytic leukemia: Are we finally solving the identity crisis? *Blood Rev.* 2016;30(5):381-388.

Patnaik MM, Tefferi A. Chronic myelomonocytic leukemia: 2016 update on diagnosis, risk stratification, and management. *Am J Hematol.* 2016;91(6):631-642.

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Chemotherapy for Chronic Myelomonocytic Leukemia

Chemotherapy (chemo) is the use of drugs for treating a disease such as cancer. The drugs can be swallowed as pills, or a needle can be used to inject them into a vein or muscle. Chemo is considered systemic treatment because these drugs enter the bloodstream and reach most areas of the body. This type of treatment is useful for diseases like chronic myelomonocytic leukemia (CMML) that are not only in one part of the body. Chemo cannot cure CMML, but it can help kill the abnormal bone marrow cells and allow normal ones to grow back.

Hydroxyurea

Hydroxyurea (hydroxycarbamate, Hydrea[®]) is a chemo drug that has helped some patients with CMML live longer. This drug comes as a capsule that's taken by mouth daily. It can bring the numbers of white blood cells and monocytes down to normal. It may also help shrink an enlarged spleen. Because the main effect of hydroxyurea is to lower blood counts, anyone taking this drug will have their blood counts checked regularly. Other side effects are usually mild and easily tolerated. Some patients have stayed on this drug for years without problems.

Hypomethylating agents

These drugs affect the way genes are controlled. Examples of this type of drug include azacytidine (Vidaza[®]) and decitabine (Dacogen[®]). Azacytidine is given as a shot under the skin or into your blood (IV) for 7 days in a row every month. Decitabine is given into your blood (IV), either once every 8 hours for 3 days, or once a day for 5 days. These drugs have been studied best in treating [myelodysplastic syndromes¹](#), where they seem to help stop abnormal cells in the bone marrow from dividing to make new cells. This lets the normal cells grow again, often leading to improved blood counts and less need for transfusions. Fewer patients with CMML have been treated with these drugs in studies, but they had similar benefits in terms of blood counts.

Side effects are usually mild and rarely lead to stopping treatment. Still, these drugs can have some of the same side effects as regular chemotherapy, including:

- Nausea/vomiting
- Diarrhea
- Fatigue and weakness
- Low blood counts (most often the white blood cells or platelets)

Conventional chemotherapy

For a long time, CMML was grouped with [myelodysplastic syndromes](#)², and so it was treated with the same chemo drugs. Some of the chemo combos that have been used include:

- Cytarabine (ara-C) with idarubicin
- Cytarabine with topotecan
- Cytarabine with fludarabine

Sometimes, topotecan is given by itself.

This type of treatment can help some patients, but it can cause severe side effects, including life-threatening infections or other problems. Using lower doses of chemo drugs is an approach that can help lower the chance of serious side effects. This treatment is generally only used in young and otherwise healthy people with CMML. Most patients with CMML are older and have other health problems. They are less likely to benefit from this intense type of chemo. Still, this may be an option for some people with advanced CMML.

Chemo drugs can cause many [side effects](#)³. The side effects depend on the type and dose of the drugs that are given and how long they are taken. Common side effects include:

- Hair loss
- Mouth sores
- Loss of appetite
- Nausea and vomiting
- Low blood counts

Chemo often slows blood cell production. In CMML, this problem is usually made worse before it gets better. It can lead to:

- Less ability to fight [infection](#)⁴ (low white blood cell counts)
- Easy bruising and bleeding (low platelet counts)
- Fatigue (low red blood cell counts)

When platelet counts get very low, patients may need platelet transfusions to prevent or stop bleeding. Likewise, [fatigue](#)⁵ caused by low red blood cell counts can be treated with red blood cell transfusions.

Most side effects are short-term and will go away over time after treatment ends. Your

health care team often can suggest ways to lessen side effects. For example, other drugs can be given along with the chemo to prevent or reduce [nausea and vomiting](#)⁶.

Chemo drugs can also damage organs such as the kidneys, liver, testes, ovaries, brain, heart, and lungs. With careful monitoring, such side effects are rare. If serious side effects do occur, the chemo treatments may have to be reduced or stopped, at least for a short time.

Carefully monitoring and adjusting drug doses are important because some of these side effects can be permanent.

See [Chemotherapy](#)⁷ for more information.

Hyperlinks

1. www.cancer.org/cancer/myelodysplastic-syndrome.html
2. www.cancer.org/cancer/myelodysplastic-syndrome.html
3. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects.html
4. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/infections.html
5. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/fatigue.html
6. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/nausea-and-vomiting.html
7. www.cancer.org/treatment/treatments-and-side-effects/treatment-types/chemotherapy.html

References

See all references for Chronic Myelomonocytic Leukemia
(www.cancer.org/cancer/chronic-myelomonocytic-leukemia/references.html)

Alfonso A, Montalban-Bravo G, Garcia-Manero G. Current management of patients with chronic myelomonocytic leukemia. *Curr Opin Oncol*. 2017;29(1):79-87.

Benton CB, Nazha A, Pemmaraju N, Garcia-Manero G. Chronic myelomonocytic leukemia: Forefront of the field in 2015. *Crit Rev Oncol Hematol*. 2015;95(2):222-242.

Decitabine: Package Insert and Label Information. Accord Healthcare Inc. March 9,

2017.

Nazha A, Prebet T, Gore S, Zeidan AM. Chronic myelomonocytic leukemia: Are we finally solving the identity crisis? *Blood Rev.* 2016;30(5):381-388.

Vidaza: Package Insert and Label Information. Celgene Corporation. August 29, 2016.

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Growth Factors for Treating Chronic Myelomonocytic Leukemia

Hematopoietic growth factors are hormone-like substances that stimulate bone marrow to produce blood cells. These substances occur naturally in the body, but scientists have found a way to make them in large amounts. This lets patients get larger doses of these growth factors than their body would make. Growth factor drugs are usually given by subcutaneous (under the skin) injections (shots).

Shortages of blood cells cause many of the symptoms in people with chronic myelomonocytic leukemia (CMML), and growth factors can help keep blood counts at more normal levels.

Erythropoietin (Epo[®] or Procrit[®]) is a growth factor that promotes red blood cell production. It can help some patients avoid getting a lot of red blood cell transfusions. Sometimes erythropoietin is given along with a growth factor for white blood cells (G-CSF, Neupogen[®], or filgrastim) to improve the patient's response to the erythropoietin. Darbepoetin (Aranesp[®]) is a long-acting form of erythropoietin. It works in the same way but can be given less often.

A drug called oprelvekin (Neumega[®], interleukin-11, or IL-11) can be used to stimulate platelet production. This drug can help increase the platelet counts of some CMML patients for a time, but then the counts go down again. For most people with CMML, this drug is not very helpful.

References

See all references for Chronic Myelomonocytic Leukemia

(www.cancer.org/cancer/chronic-myelomonocytic-leukemia/references.html)

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Radiation Therapy for Chronic Myelomonocytic Leukemia

Radiation therapy is treatment with high-energy rays or particles to kill cancer cells. The most common form of radiation therapy is external beam radiation therapy. The x-rays are aimed at the cancer from a machine outside the patient's body. The treatment is much like getting an x-ray, but the radiation is more intense. The procedure itself is painless. Before your treatments start, the radiation team will take careful measurements to determine the correct angles for aiming the radiation beams and the proper dose of radiation. Each treatment lasts only a few minutes, but the setup time -- getting you into place for treatment -- usually takes longer.

If someone who has chronic myelomonocytic leukemia (CMML) is having problems from a very enlarged spleen, radiation therapy may be used to shrink it. Shrinking the spleen can improve symptoms like abdominal (belly) pain and trouble eating, but there are some risks. Treating the spleen with radiation can affect the way it works. Since the spleen helps protect against [infections](#)¹, this can increase the risk of severe infections. If you are considering treatment with radiation for an enlarged spleen, you should talk about the risks and benefits with your doctor. You may also need to get certain vaccines before radiation starts.

Hyperlinks

1. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/infections.html

References

See all references for Chronic Myelomonocytic Leukemia

(www.cancer.org/cancer/chronic-myelomonocytic-leukemia/references.html)

Merck Manual. *Enlarged Spleen (Splenomegaly)*. Accessed October 6, 2017 at www.merckmanuals.com/home/blood-disorders/spleen-disorders/enlarged-spleen.

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Surgery for Chronic Myelomonocytic Leukemia

Surgery is rarely used to treat chronic myelomonocytic leukemia (CMML). Sometimes, though, surgery to remove the spleen may be an option if the patient is having problems from an enlarged spleen. Like all surgery, this has risks related to anesthesia and wound infection. Also, since the spleen helps protect against infection, removing it can increase the risk of severe infections. If you are considering having your spleen removed, discuss the risks and benefits with your doctor.

General information about surgery in the treatment of cancer can be found in [Cancer Surgery](#)¹.

Hyperlinks

1. www.cancer.org/treatment/treatments-and-side-effects/treatment-types/surgery.html

References

See all references for Chronic Myelomonocytic Leukemia

(www.cancer.org/cancer/chronic-myelomonocytic-leukemia/references.html)

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Stem Cell Transplant for Chronic Myelomonocytic Leukemia

Stem cell transplant (SCT) is the only treatment that can cure chronic myelomonocytic leukemia (CMML). In this treatment, the patient gets high-dose chemotherapy often along with radiation to the entire body to kill the cells in the bone marrow (including the abnormal bone marrow cells). Then the patient is given new, healthy blood-forming stem cells. The 2 main types of SCT are: allogeneic and autologous.

In an **autologous stem cell transplant**, after the bone marrow is destroyed, the patient gets back their own stem cells. This type of transplant is not a standard treatment for patients with CMML because their bone marrow has abnormal stem cells.

For an **allogeneic stem cell transplant**, the patient gets blood-forming stem cells from another person -- the donor. The best results are when the donor's cells are closely matched to the patient's cell type and the donor is closely related to the patient, such as a brother or sister. Less often, an unrelated donor is matched to the patient.

Allogeneic stem cell transplant can have serious, even fatal, side effects and so is rarely used in elderly patients. Because of these side effects, some doctors only use this treatment for people younger than a certain age.

A special type of allogeneic transplant, a **non-myeloablative allogeneic stem cell transplant**, may be an option for older patients. This type of transplant is sometimes called a mini-transplant or a mini-allo. In this type, the doses of chemo and/or radiation that are given are lower than those used for a standard allogeneic transplant. These doses are not high enough to kill all the bone marrow cells, but they kill just enough to allow the donor cells to take hold and grow in the bone marrow. The lower doses of chemo and/or radiation cause fewer side effects, which makes this type of transplant easier for older patients to tolerate. Still, it has some serious side effects.

For now, allogeneic SCT is the only treatment that can cure some patients with CMML, but not all patients who get a transplant are cured. And patients can die from complications of this treatment. Also, many people with CMML are not able to get this treatment.

For more information, see [Stem Cell Transplant for Cancer](#)¹.

Hyperlinks

1. www.cancer.org/treatment/treatments-and-side-effects/treatment-types/stem-cell-transplant.html

References

See all references for Chronic Myelomonocytic Leukemia

www.cancer.org/cancer/chronic-myelomonocytic-leukemia/references.html

Benton CB, Nazha A, Pemmaraju N, Garcia-Manero G. Chronic myelomonocytic leukemia: Forefront of the field in 2015. *Crit Rev Oncol Hematol*. 2015;95(2):222-242.

de Witte T, Bowen D, Robin M, et al. Allogeneic hematopoietic stem cell transplantation for MDS and CMML: recommendations from an international expert panel. *Blood*. 2017;129(13):1753-1762.

Patnaik MM, Tefferi A. Chronic myelomonocytic leukemia: 2016 update on diagnosis, risk stratification, and management. *Am J Hematol*. 2016;91(6):631-642.

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General Approach to Treatment of Chronic Myelomonocytic Leukemia

Stem cell transplant (SCT) is the only way to cure patients with chronic myelomonocytic leukemia (CMML). It may be the treatment of choice for younger patients when a matched donor is available. Advances in SCT processes mean this treatment could also be an option for some older patients.

If SCT is not an option, CMML is not curable. In this case, the goal is to relieve symptoms while limiting complications and reducing **side effects**¹. **Supportive care**, such as transfusions, blood cell growth factors, and antibiotics to treat infections, is used to treat all patients with CMML so they can live as long as possible.

Many times no treatment is needed for CMML but if it is, either the drug azacytidine

(Vidaza) or decitabine (Dacogen) is often the first choice. These drugs may make blood counts drop for a time after treatment is started. Then, if the drug is working, blood counts rise to levels above those seen before treatment was started.

A major benefit for patients receiving azacytidine or decitabine is less need for transfusions and an improved quality of life. If their disease responds, the patients often are less fatigued and are able to function more normally.

Treatment with hydroxyurea can help some patients who have high white blood cell counts. This drug can help lower monocyte counts and decrease the need for transfusions. It can also shrink the spleen to help the patient feel more comfortable.

Conventional [chemotherapy](#) using drug combinations used to treat [acute myeloid leukemia](#)² can be an option for patients who are younger and otherwise healthy, but it's rarely used.

Hyperlinks

1. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects.html
2. www.cancer.org/cancer/acute-myeloid-leukemia.html

References

See all references for Chronic Myelomonocytic Leukemia
(www.cancer.org/cancer/chronic-myelomonocytic-leukemia/references.html)

Alfonso A, Montalban-Bravo G, Garcia-Manero G. Current management of patients with chronic myelomonocytic leukemia. *Curr Opin Oncol.* 2017;29(1):79-87.

Patnaik MM, Tefferi A. Chronic myelomonocytic leukemia: 2016 update on diagnosis, risk stratification, and management. *Am J Hematol.* 2016;91(6):631-642.

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Written by

The American Cancer Society medical and editorial content team
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After Treatment for Chronic Myelomonocytic Leukemia

Living as a CMML Survivor

For many people, cancer treatment often raises questions about next steps as a survivor.

- [Living as a Chronic Myelomonocytic Leukemia Survivor](#)

Living as a Chronic Myelomonocytic Leukemia Survivor

Since chronic myelomonocytic leukemia (CMML) is rarely cured, most patients never actually complete treatment. Patients may go through a series of treatments with rests in-between. Some people stop active treatment in favor of [supportive care](#)¹. Learning to live with cancer that does not go away can be difficult and very stressful. See [Managing Cancer As A Chronic Illness](#)² for more about this.

Follow-up care

Even if you have stopped your treatment for CMML, it is still very important to go to all your follow-up appointments. During these visits, your doctors will ask about symptoms, physically examine you, and order blood tests. They will continue to watch for signs of

[infection](#)³ and signs that you are moving on to active [leukemia](#)⁴. They'll also watch for short-term and long-term [side effects](#)⁵ of treatment. This is the time for you to ask your health care team any questions and to discuss any concerns you might have.

Almost any cancer treatment can have side effects. Some might last for just a few weeks or months, but others can be permanent. Don't hesitate to tell your cancer care team about any symptoms or side effects that bother you so they can help you manage them.

Ask your doctor for a survivorship care plan

Your survivorship care plan might include:

- A suggested schedule for follow-up exams and tests
- A schedule for other tests you might need in the future, such as early detection (screening) tests for other types of cancer, or tests to look for long-term health effects from your cancer or its treatment
- A list of possible late- or long-term side effects from your treatment, including what to watch for and when you should contact your doctor
- Diet and physical activity suggestions
- Reminders to keep your appointments with your primary care provider (PCP), who will monitor your general health care

Keeping health insurance and copies of your medical records

Even after treatment, it's very important to keep your health insurance. With a chronic disease like CMML, your treatment may never really be over. Tests and doctor visits cost a lot, and even though no one wants to think about their cancer coming back or having to continue treatment for a long time, this could happen.

At some point after your cancer treatment, you might find yourself seeing a new doctor who doesn't know about your medical history. It's important to keep copies of your medical records to give your new doctor the details of your diagnosis and treatment. Learn more in [Keeping Copies of Important Medical Records](#)⁶.

Can I lower my risk of CMML progressing or coming back?

If you have (or have had) CMML, you probably want to know if there are things you can do that might lower your risk of the cancer growing or coming back, such as exercising,

eating a certain type of diet, or taking nutritional supplements. Unfortunately, it's not yet clear if there are things you can do that will help.

Adopting healthy behaviors such as [not smoking](#)⁷, [eating well](#)⁸, [getting regular physical activity](#)⁹, and [staying at a healthy weight](#)¹⁰ might help, but no one knows for sure. However, we do know that these types of changes can have positive effects on your health that can extend beyond your risk of CMML or other cancers.

About dietary supplements

So far, no [dietary supplements](#)¹¹ (including vitamins, minerals, and herbal products) have been shown to clearly help lower the risk of cancer progressing or coming back. This doesn't mean that no supplements will help, but it's important to know that none have been proven to do so.

Dietary supplements are not regulated like medicines in the United States – they do not have to be proven effective (or even safe) before being sold, although there are limits on what they're allowed to claim they can do. If you're thinking about taking any type of nutritional supplement, talk to your health care team. They can help you decide which ones you can use safely while avoiding those that might be harmful.

If the cancer comes back

If the cancer does recur at some point, your treatment options will depend on what treatments you've had before, your overall health, and other factors.

For more general information, see [Understanding Recurrence](#)¹².

Getting emotional support

Some amount of feeling depressed, anxious, or worried is normal when cancer is a part of your life. Some people are affected emotionally more than others. But everyone can benefit from help and support from other people, whether friends and family, religious groups, support groups, professional counselors, or others. Learn more in [Life After Cancer](#)¹³.

Hyperlinks

1. www.cancer.org/cancer/chronic-myelomonocytic-leukemia/treating/supportive-therapy.html

2. www.cancer.org/treatment/survivorship-during-and-after-treatment/when-cancer-doesnt-go-away.html
3. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/infections.html
4. www.cancer.org/cancer/acute-myeloid-leukemia.html
5. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects.html
6. www.cancer.org/treatment/survivorship-during-and-after-treatment/be-healthy-after-treatment/keeping-copies-of-important-medical-records.html
7. www.cancer.org/healthy/stay-away-from-tobacco.html
8. www.cancer.org/healthy/eat-healthy-get-active/eat-healthy.html
9. www.cancer.org/healthy/eat-healthy-get-active/get-active.html
10. www.cancer.org/healthy/eat-healthy-get-active/take-control-your-weight.html
11. www.cancer.org/treatment/treatments-and-side-effects/complementary-and-alternative-medicine/dietary-supplements.html
12. www.cancer.org/treatment/survivorship-during-and-after-treatment/understanding-recurrence.html
13. www.cancer.org/treatment/survivorship-during-and-after-treatment/be-healthy-after-treatment/life-after-cancer.html

References

See all references for Chronic Myelomonocytic Leukemia

www.cancer.org/cancer/chronic-myelomonocytic-leukemia/references.html

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