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# Treating Chronic Myelomonocytic Leukemia (CMML)

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 Person with Chronic Myelomonocytic Leukemia \(CMML\)](#)
- [Chemotherapy for Chronic Myelomonocytic Leukemia \(CMML\)](#)
- [Growth Factors and Similar Medicines for Chronic Myelomonocytic Leukemia](#)
- [Radiation Therapy for Chronic Myelomonocytic Leukemia \(CMML\)](#)
- [Surgery for Chronic Myelomonocytic Leukemia \(CMML\)](#)
- [Stem Cell Transplant for Chronic Myelomonocytic Leukemia \(CMML\)](#)

## 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 Treating Chronic Myelomonocytic Leukemia \(CMML\)](#)

## 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 **medical oncologist**: a doctor who treats cancer with medicines such as chemotherapy (Many doctors who treat leukemias are trained in both hematology and oncology.)
- A **radiation oncologist**: a doctor who treats cancer with radiation therapy
- 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 (PAs), nurse practitioners (NPs), nurses, nutrition specialists, social workers, and other health professionals.

- [Health Professionals Who Are Part of a Cancer Care Team](#)

## **Making treatment decisions**

It's important to discuss all of your treatment options, including their goals and possible side effects, with your doctors to help make the decision that best fits your needs. Ask questions if something is not clear. 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.

If time allows, it's 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 Leukemia](#)
- [Seeking a Second Opinion](#)

## **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.

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 Trials](#)

## Considering complementary and alternative methods

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

**Complementary** methods are treatments that are used **along with** your regular medical care. **Alternative** treatments are used **instead of** standard 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 Integrative Medicine](#)

## Help getting through cancer treatment

People with cancer need support and information, no matter what stage of illness they may be in. Knowing all of your options and finding the resources you need will help you make informed decisions about your care.

Whether you are thinking about treatment, getting treatment, or not being treated at all, you can still get supportive care to help with pain or other symptoms. Communicating with your cancer care team is important so you understand your diagnosis, what treatment is recommended, and ways to maintain or improve your quality of life.

Different types of programs and support services may be helpful, and they can be 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 Cancer Knowledge Hub at 1-800-227-2345 and speak with one of our caring, trained cancer helpline specialists. Or, if you prefer, you can use our chat feature on cancer.org to

connect with one of our specialists.

- [Palliative Care](#)
- [Programs & Services](#)

### **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 as 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](#)

*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 your cancer care team any questions you may have about your treatment options.*

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## **Supportive Therapy for the Person with Chronic Myelomonocytic Leukemia (CMML)**

**Supportive therapy** is treatment aimed at preventing or relieving symptoms. The main purpose of this type of treatment is to improve the comfort and quality of life for someone diagnosed with cancer, no matter what type of cancer the person has or what

the goal of treatment might be. You might also hear supportive care referred to as **palliative care**, **symptom management**, or **comfort care**.

Treating chronic myelomonocytic leukemia (CMML) can often help with the symptoms it causes. But some treatments are aimed more at the symptoms themselves.

- [Treatments to help with low blood cell counts](#)
- [More information about palliative care](#)

## Treatments to help with low blood cell counts

For many people with CMML, one of the main goals of treatment is to prevent the problems caused by low blood cell counts.

For instance, [low red blood cell counts](#)<sup>1</sup> (anemia) can cause severe fatigue. Treating the anemia with [blood transfusions](#)<sup>2</sup> and/or [growth factors](#) such as epoetin alfa can often 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 because all donated blood is tested before being transfused, and the benefits of the transfused cells greatly outweigh this very small 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](#)<sup>3</sup> for more details.

## More information about palliative care

To learn more about how palliative care can be used to help control or reduce symptoms caused by cancer, see [Palliative Care](#)<sup>4</sup>.

To learn about some of the side effects of cancer or treatment and how to manage them, see [Managing Cancer-related Side Effects](#)<sup>5</sup>.

## Hyperlinks

1. [www.cancer.org/cancer/managing-cancer/side-effects/low-blood-counts.html](http://www.cancer.org/cancer/managing-cancer/side-effects/low-blood-counts.html)
2. [www.cancer.org/cancer/managing-cancer/treatment-types/blood-transfusion-and-donation.html](http://www.cancer.org/cancer/managing-cancer/treatment-types/blood-transfusion-and-donation.html)
3. [www.cancer.org/cancer/managing-cancer/side-effects/infections.html](http://www.cancer.org/cancer/managing-cancer/side-effects/infections.html)
4. [www.cancer.org/cancer/managing-cancer/palliative-care.html](http://www.cancer.org/cancer/managing-cancer/palliative-care.html)
5. [www.cancer.org/cancer/managing-cancer/side-effects.html](http://www.cancer.org/cancer/managing-cancer/side-effects.html)

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# Chemotherapy for Chronic Myelomonocytic Leukemia (CMML)

Chemotherapy (chemo) is the use of certain types of drugs to treat cancer. The drugs can be swallowed as pills, or they can be injected 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 chronic myelomonocytic leukemia (CMML), because the leukemia cells are not just in one part of the body. Chemo can help kill the leukemia cells in the bone marrow and allow normal ones to grow back.

- [Hydroxyurea](#)
- [Hypomethylating agents](#)
- [Other chemotherapy drugs](#)
- [More information about chemotherapy](#)

## Hydroxyurea

Hydroxyurea is a chemo drug that can help some people with CMML live longer. This drug comes as a capsule that's taken by mouth, typically once or twice a day. It can bring the numbers of white blood cells, including monocytes, down to normal. It may also help shrink an enlarged spleen.

Because the main effect of hydroxyurea is to lower blood cell counts, anyone taking this drug will need to have their blood counts checked regularly. Other **side effects** are usually mild and can include mouth sores, skin rash or changes in color, and nail changes.

## Hypomethylating agents

These drugs affect the way some genes inside cells are controlled. They activate some genes that help cells mature. They also kill cells that are dividing rapidly. This helps the normal bone marrow cells grow again, often leading to improved blood cell counts and the need for fewer transfusions.

Examples of this type of drug include:

- **Azacitidine (Vidaza)**
- **Decitabine (Dacogen)**

These drugs are given as a shot under the skin or as an infusion into your blood (IV), often for several days in a row, followed by several weeks off.

A newer drug, known as **Inqovi**, combines decitabine with cedazuridine, which helps stop the decitabine from being broken down in the digestive system. This allows the drug to be taken by mouth as a tablet, typically once a day for 5 days in a row, which is repeated every 4 weeks.

**Side effects** of hypomethylating agents are usually mild and rarely lead to stopping treatment. Still, these drugs can have some of the same side effects as standard chemo drugs, including:

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

## Other chemotherapy drugs

In the past, other chemo drugs have sometimes been used to treat CMML, especially if the drugs above are no longer working. This type of chemo might help a small number of people, but it can also have more serious side effects, which limits how useful it is, especially in people who are in poorer health. For people with CMML who are healthy enough, the goal is usually to have a [stem cell transplant](#) if it can be done, as it offers the best chance to cure it.

## More information about chemotherapy

For more general information about how chemotherapy is used to treat cancer, see [Chemotherapy](#)<sup>1</sup>.

To learn about some of the side effects listed here and how to manage them, see [Managing Cancer-related Side Effects](#)<sup>2</sup>.

## Hyperlinks



1. [www.cancer.org/cancer/managing-cancer/treatment-types/chemotherapy.html](http://www.cancer.org/cancer/managing-cancer/treatment-types/chemotherapy.html)
2. [www.cancer.org/cancer/managing-cancer/side-effects.html](http://www.cancer.org/cancer/managing-cancer/side-effects.html)

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# Growth Factors and Similar Medicines for Chronic Myelomonocytic Leukemia

Shortages of blood cells cause many of the symptoms in people with chronic myelomonocytic leukemia (CMML). Hematopoietic growth factors are hormone-like substances that stimulate bone marrow to make more blood cells. These substances occur naturally in the body, but they can also be made in the lab in large amounts. This lets patients get larger doses of these growth factors than their body would normally make.

- [Growth factors to raise red blood cell levels](#)

- [Growth factors to raise white blood cell levels](#)
- [Medicines to raise blood platelet levels](#)

Giving a person growth factor drugs is one way to raise low blood cell counts. But transfusions of blood components (red blood cells or platelets) are typically used more often. Growth factor drugs are usually given by subcutaneous (under the skin) injections.

## Growth factors to raise red blood cell levels

**Epoetin alfa (Epogen or Retacrit)** is a manmade version of the growth factor erythropoietin, which tells the body to make more red blood cells. It can often help lower the number of red blood cell transfusions a person needs. Giving both epoetin and G-CSF (see "Growth factors to raise white blood cells") can sometimes improve the person's response to epoetin.

**Darbepoetin alfa (Aranesp)** is a long-acting form of epoetin. It works in the same way can be given less often.

**Luspatercept (Reblozyl)** isn't a growth factor, but it is another medicine that can help the body make more healthy red blood cells. Known as a red blood cell maturation agent, this drug affects TGF- proteins in the bone marrow. TGF- proteins normally help control how quickly new cells in the bone marrow mature into functioning red blood cells, so that there aren't too many or too few of them in the body. By acting on specific TGF- proteins, luspatercept helps the bone marrow make more healthy, fullgrown red blood cells.

## Growth factors to raise white blood cell levels

**Granulocyte colony stimulating factor (G-CSF, filgrastim, Neupogen or [other brand names](#)<sup>1</sup>)** can improve white blood cell production. This is not used routinely to prevent infections, but it can help some patients whose main problem is a shortage of white blood cells and who have frequent infections.

**Pegfilgrastim (Neulasta, [other brand names](#)<sup>2</sup>)** is a long-acting form of G-CSF. It works in the same way but can be given less often.

## Medicines to raise blood platelet levels

Drugs called thrombopoietin-receptor agonists, such as **romiplostim (Nplate)** and **eltrombopag (Promacta)** might help some people with CMML who have very low platelet levels.

A drug called **oprelvekin (interleukin-11, IL-11, or Neumega)** can be used to raise platelet counts after chemotherapy and in some other diseases. But for most people with CMML, this drug has not been found to be very helpful.

## Hyperlinks

1. [www.cancer.org/cancer/managing-cancer/treatment-types/biosimilar-drugs/list.html](http://www.cancer.org/cancer/managing-cancer/treatment-types/biosimilar-drugs/list.html)
2. [www.cancer.org/cancer/managing-cancer/treatment-types/biosimilar-drugs/list.html](http://www.cancer.org/cancer/managing-cancer/treatment-types/biosimilar-drugs/list.html)

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# Radiation Therapy for Chronic Myelomonocytic Leukemia (CMML)

Radiation therapy is treatment with high-energy rays or particles to kill cancer cells.

- [How are radiation treatments given for chronic myelomonocytic leukemia \(CMML\)?](#)
- [When is radiation therapy used in chronic myelomonocytic leukemia \(CMML\)?](#)
- [More information about radiation therapy](#)

## How are radiation treatments given for chronic myelomonocytic leukemia (CMML)?

The most common form of radiation therapy is external beam radiation therapy, in which x-rays are aimed at the cancer from a machine outside the body.

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. Treatment is much like getting an x-ray, but the radiation is much stronger. The procedure itself is painless.

## When is radiation therapy used in chronic myelomonocytic leukemia (CMML)?

Radiation therapy is not a common treatment for chronic myelomonocytic leukemia (CMML), because the leukemia cells are throughout the body.

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

Radiation therapy, in the form of total body irradiation (TBI), might be part of the treatment given **before a [stem cell transplant](#)**<sup>2</sup>. The goal of radiation in this setting is to kill the cells in the bone marrow, including the leukemia cells, which are then replaced with normal cells when the person gets the transplant.

## More information about radiation therapy

To learn more about how radiation is used to treat cancer, see [Radiation Therapy](#)<sup>3</sup>.

To learn about some of the side effects listed here and how to manage them, see [Managing Cancer-related Side Effects](#)<sup>4</sup>.

## Hyperlinks

1. [www.cancer.org/cancer/managing-cancer/side-effects/infections.html](http://www.cancer.org/cancer/managing-cancer/side-effects/infections.html)
2. [www.cancer.org/cancer/types/chronic-myeloid-leukemia/treating/bone-marrow-stem-cell.html](http://www.cancer.org/cancer/types/chronic-myeloid-leukemia/treating/bone-marrow-stem-cell.html)
3. [www.cancer.org/cancer/managing-cancer/treatment-types/radiation.html](http://www.cancer.org/cancer/managing-cancer/treatment-types/radiation.html)
4. [www.cancer.org/cancer/managing-cancer/side-effects.html](http://www.cancer.org/cancer/managing-cancer/side-effects.html)

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# Surgery for Chronic Myelomonocytic Leukemia (CMML)

Surgery is rarely used to treat chronic myelomonocytic leukemia (CMML), because the leukemia cells are throughout the body.

Sometimes, surgery to remove the spleen (splenectomy) may be an option if it is enlarged, causing problems, and other treatments aren't helpful.

Like all surgery, this has risks related to anesthesia, bleeding, 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. You may also need to get vaccines to help prevent certain infections if you're going to have your spleen removed.

To learn more about surgery in general, see [Cancer Surgery](#)<sup>1</sup>.

## Hyperlinks

1. [www.cancer.org/cancer/managing-cancer/treatment-types/surgery.html](http://www.cancer.org/cancer/managing-cancer/treatment-types/surgery.html)

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# Stem Cell Transplant for Chronic Myelomonocytic Leukemia (CMML)

A **stem cell transplant (SCT)**, also known as a **bone marrow transplant (BMT)**, is an intense treatment that offers the best chance to cure chronic myelomonocytic leukemia (CMML), if it can be done.

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 leukemia cells). Then the patient is given new, healthy blood-forming stem cells, which settle in the bone marrow and start making new blood cells.

- [Autologous stem cell transplants](#)
- [Allogeneic stem cell transplants](#)
- [A less intense transplant option](#)
- [More information about stem cell transplant](#)

The main types of stem cell transplant (SCT) are autologous and allogeneic.

## Autologous stem cell transplants

In an autologous stem cell transplant, a person 'donates' some of **their own blood stem cells** (from either their blood or bone marrow), which are frozen until they are needed. After the bone marrow is destroyed with chemo and/or radiation, the person gets their own stem cells back. Autologous transplants aren't routinely used to treat CMML, because the person's own blood stem cells are likely to contain leukemia cells as well, which they would get back after the transplant.

## Allogeneic stem cell transplants

For an allogeneic stem cell transplant, the person with CMML gets blood-forming **stem cells from another person** (a 'donor'). This is the type of SCT used for CMML, if it can be done. The results are best when the donor's cell type is 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, a matched, unrelated donor may be the source of the stem cells.

Allogeneic SCTs can have serious, even life-threatening, side effects, including prolonged low blood cell counts that can make a person very vulnerable to infections, bleeding, and other problems. Because of this, an allogeneic SCT isn't likely to be a good option in people who are older and/or have other major health problems.

## A less intense transplant option

A type of transplant known as a **non-myeloablative allogeneic stem cell transplant** may be an option for some people, especially if they might not be able to tolerate the high doses or chemo and/or radiation. This is sometimes called a **mini-transplant** or a **mini-allo**.

For this treatment, the doses of chemo and/or radiation are lower than those used for a standard allogeneic transplant. These doses aren't high enough to kill all the bone marrow cells, but they kill enough to allow the donor cells to take hold and grow in the bone marrow. These donor cells can then help wipe out any remaining leukemia cells. The lower doses of chemo and/or radiation cause fewer side effects, which makes this type of transplant easier for older patients to tolerate. But it can still have some serious side effects.

While an allogeneic SCT offers the best chance to cure some people with CMML, many people with CMML aren't able to get this treatment.

## More information about stem cell transplant

To learn more about stem cell transplants, including how they are done and their potential side effects, see [Stem Cell Transplant for Cancer](#)<sup>1</sup>.

For more general information about side effects and how to manage them, see [Managing Cancer-related Side Effects](#)<sup>2</sup>.

## Hyperlinks

1. [www.cancer.org/cancer/managing-cancer/treatment-types/stem-cell-transplant.html](http://www.cancer.org/cancer/managing-cancer/treatment-types/stem-cell-transplant.html)
2. [www.cancer.org/cancer/managing-cancer/side-effects.html](http://www.cancer.org/cancer/managing-cancer/side-effects.html)



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# General Approach to Treating Chronic Myelomonocytic Leukemia (CMML)

Treatment for people with chronic myelomonocytic leukemia (CMML) depends on a number of factors, such as:

- A person's age and overall health (including if a person is eligible for a stem cell transplant)
- If the CMML is causing symptoms, and how fast it seems to be progressing
- If the CMML is in a higher- or lower-[risk group](#)<sup>1</sup>
- A person's preferences and goals for treatment

In general, a [stem cell transplant](#) (SCT) is the only realistic way to try to cure CMML, while other treatments are aimed at treating symptoms CMML causes and possibly

slowing its progression.

An SCT may be the treatment of choice for younger people with higher-risk CMML, if a matched stem cell donor is available. Advances in SCT means this treatment might also be an option for some older patients as well. In general, SCT hasn't been shown to be better than other treatments in people with lower-risk CMML.

If SCT is not an option, the goal is to relieve symptoms while limiting complications and reducing [side effects](#)<sup>2</sup>. [Supportive care](#), such as transfusions, blood cell [growth factors](#), and antibiotics to treat infections, is used to treat all people with CMML so they can live as long as possible.

In people who aren't having symptoms from CMML, treatment might not be needed right away. The doctors may instead just watch the CMML closely. If treatment is needed, [chemotherapy](#) is typically the first choice, with either hydroxyurea or one of the hypomethylating agents (azacitidine or decitabine). The choice often depends on what types of symptoms a person is having that need to be controlled. For example:

- A major benefit receiving azacitidine or decitabine is less need for blood transfusions and an improved quality of life. If the CMML responds, people are often less fatigued and are able to function more normally.
- Treatment with hydroxyurea can help some people with 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 person feel more comfortable.

If one type of drug doesn't work, often another can be tried.

Because CMML can often be hard to treat, taking part in a [clinical trial](#)<sup>3</sup> testing a newer treatment might be a good option for some people.

## Hyperlinks

1. [www.cancer.org/cancer/types/chronic-myelomonocytic-leukemia/detection-diagnosis-staging/staging.html](http://www.cancer.org/cancer/types/chronic-myelomonocytic-leukemia/detection-diagnosis-staging/staging.html)
2. [www.cancer.org/cancer/managing-cancer/side-effects.html](http://www.cancer.org/cancer/managing-cancer/side-effects.html)
3. [www.cancer.org/cancer/managing-cancer/making-treatment-decisions/clinical-trials.html](http://www.cancer.org/cancer/managing-cancer/making-treatment-decisions/clinical-trials.html)

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