



Acute Myeloid Leukemia

In some cases, AML can be cured with current treatment options.

Highlights

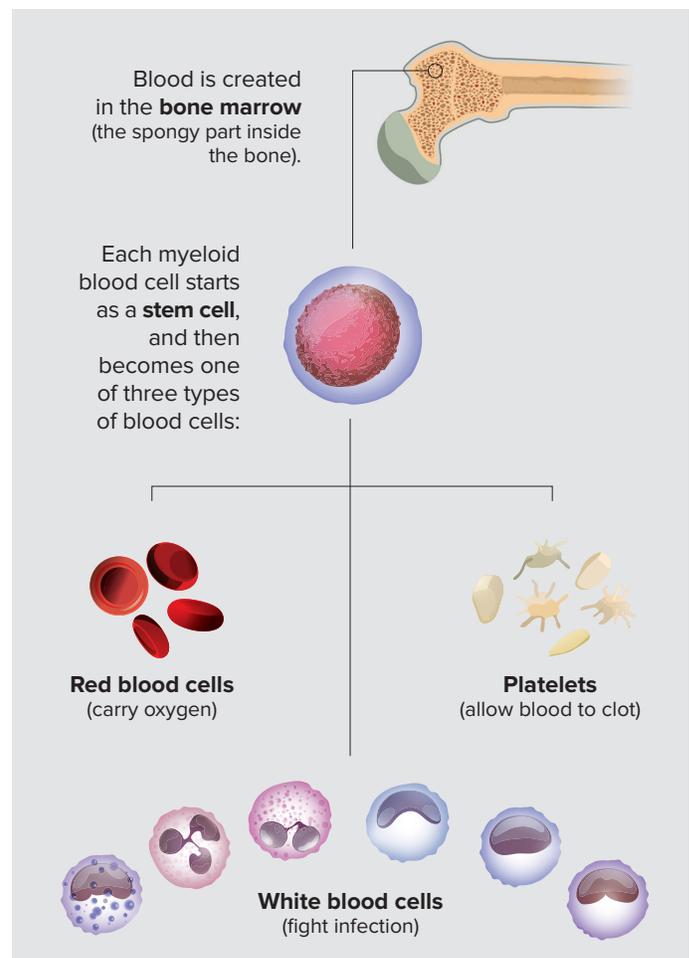
- Leukemia is a type of cancer that affects the blood and bone marrow.
- Acute myeloid leukemia (AML) is one of four main types of leukemia. It is the most common acute leukemia affecting adults.
- There is no way to prevent AML and you cannot catch AML from someone else.
- AML is a treatable cancer.

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Introduction

AML is a cancer of the bone marrow and blood, and progresses quickly if untreated.



When you have AML, something is wrong with the way your body makes one or more of these blood cells. AML develops when the genetic material of a developing stem cell in the bone marrow is damaged. This is called an “acquired mutation.”

This damaged cell becomes a leukemic cell and multiplies into billions of cells called leukemic blasts. Leukemic blasts:

- Do not function normally
- Block the production of normal cells
- Grow and survive better than normal cells

As a result, the number of healthy blood cells (red cells, white cells and platelets) is usually lower than normal.

Risk Factors

The following factors can increase the risk of getting AML:

- Increased age
- Prior treatment with chemotherapy
- Prior radiation therapy used to treat cancer
- Genetic disorders such as Down syndrome
- Tobacco smoke
- Repeated contact with the chemical benzene. Benzene is a chemical used in the production of solvents, adhesives, disinfectants, paints, and other industrial products.

Signs and Symptoms

You may experience these signs and symptoms:

- Aches and pains, mild fever, swelling
 - When you have fewer normal blood cells

- Fatigue, paleness, and shortness of breath
 - When your red cell count is low (anemia)
- Weight loss
 - When you are eating less or using more energy
- Black and blue marks or pinhead-sized red spots; bleeding for a long time from minor cuts
 - When your platelet count is low (thrombocytopenia), your body heals more slowly
- Higher risk of infection
 - When your white cells count is low, your immune system can't effectively guard against infection

Diagnosis

Because AML shares symptoms with many other illnesses, it is important to be properly diagnosed using blood and bone marrow test results.

These tests include:

Complete Blood Counts

This test measures the number of red cells, white cells and platelets in your blood. A person with AML usually has lower than normal counts of red blood cells and platelets, and their white blood cell count may be higher or lower than normal.

Blood Cell Examination

In this test, blood cells are examined under a microscope to check if they appear normal. An individual with AML usually has too many leukemic blast cells (immature blood-forming cells not normally found in the bloodstream) that do not function normally.

Bone Marrow Aspiration and Biopsy

These tests examine bone marrow cells. For a bone marrow aspiration, a sample of bone marrow is collected from the hip bone. For a bone marrow biopsy, a sample of solid bone is collected that contains marrow. These tests compare the percentage of normal cells with the percentage of AML cells in the bone marrow. AML blast cells of 20% or more in the bone marrow indicate that a person has AML.

Flow Cytometry

This test classifies cells in a blood sample according to cell surface proteins, which helps to show the type of AML that you have.

Cytogenetic (Chromosomal) Analysis

This is a genetic test that looks inside of blood or bone marrow cells with a microscope. This helps to determine how your AML will respond to treatment.

Subtypes of AML

Knowing your AML subtype allows your doctor to develop a specific treatment plan.

These AML subtypes include:

- AML with recurrent genetic abnormalities
- Acute Promyelocytic Leukemia (APL)
- AML (megakaryoblastic) with a translocation between chromosomes 1 and 22
- AML with myelodysplasia-related changes
- AML related to previous chemotherapy or radiation

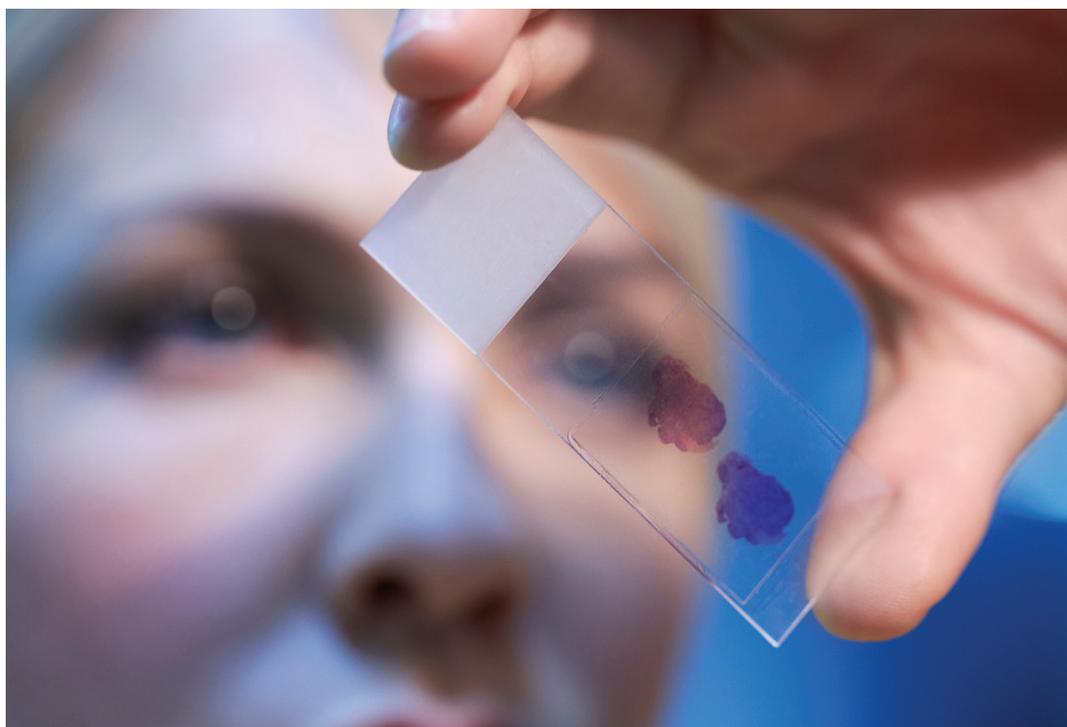
- AML not otherwise categorized (does not fall into above categories)
- Myeloid sarcoma (also known as “granulocytic sarcoma”, “chloroma” or “extramedullary myeloblastoma”)
- Blastic plasmacytoid dendritic cell neoplasm

Treatment Planning

Test results help doctors to predict how your AML will likely progress and how you will likely respond to the treatment. Some of the factors that affect your treatment plan and response are:

- Your subtype of AML
- Lab test results
- Age and general health
- Medical history including:
 - Previous chemotherapy treatment for another type of cancer
 - If you’ve had a myelodysplastic syndrome (MDS)
- Whether you have:
 - A serious infection at the time of diagnosis
 - AML in your central nervous system
 - AML that has not responded to treatment or has relapsed

Your bone marrow test results will provide information that is required for treatment planning. It is important to discuss these results with your doctor. Molecular and genetic test results are also part of the treatment planning process. Talk to your medical team about risk factors specific to you and about all treatment options including clinical trials.



Treatment

Treatment for AML varies and may include chemotherapy, stem cell transplantation, and clinical trials (new treatment options under study). Radiation therapy may sometimes be used to treat a large mass of AML cells in the spine or brain.

Induction Chemotherapy

Most of the time, you start induction chemotherapy right after an AML diagnosis. You will usually be hospitalized for four to six weeks for this first phase of treatment. The goal with induction chemotherapy is to kill as many of your AML cells as possible, get blood counts back to normal, and eliminate signs of AML for a long period of time.

Chemotherapy drugs kill or damage cancer cells. Usually, several types of drugs are used together to kill AML

cells. Each drug type works in a different way, and combining the drugs can make the treatment work better.

You are in remission when no AML cells are found in your blood and bone marrow when examined under a microscope, and your blood counts are back to normal.

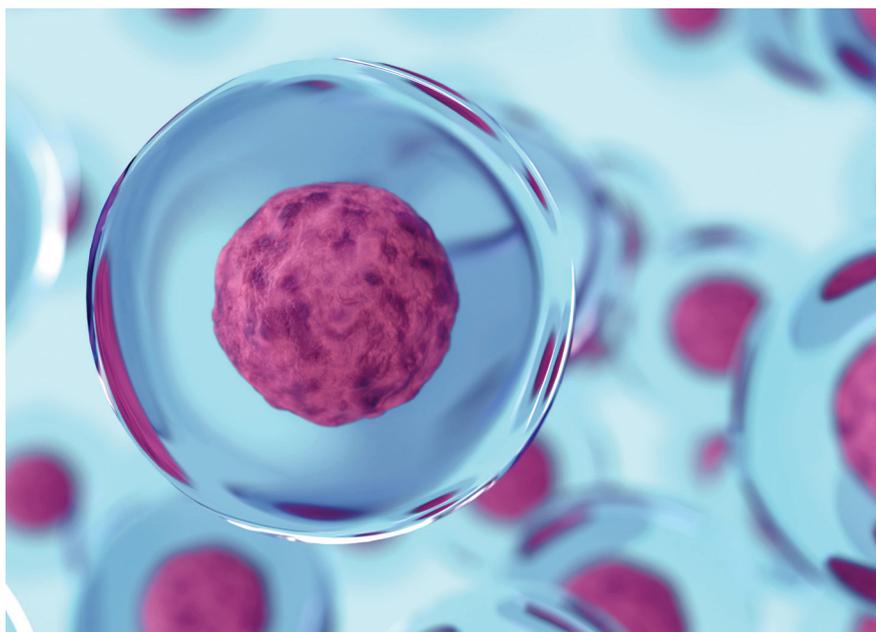
Postremission Therapy

The first round of chemotherapy usually does not get rid of all of the AML cells. These remaining AML cells, if not eliminated, can grow again and lead to relapse. More treatment is usually required even after you are in remission from AML. This is known as “postremission therapy”. Consolidation chemotherapy is part of postremission therapy for AML. Usually the same drugs used in induction chemotherapy are used for consolidation chemotherapy. Stem cell transplantation may also be part of your postremission therapy.

Stem Cell Transplantation (SCT)

SCT may be a treatment option for some AML patients. There are different types of stem cell transplantation:

Allogeneic SCT uses stem cells from a donor to help your body recover from the effects of cancer treatments. The donor may be a sibling, parent, or child or an unrelated person with stem cells that match your own. The goal of an allogeneic SCT is to restore your body's ability to make normal blood cells following chemotherapy.



Reduced-Intensity Allogeneic SCT are used in people with more risk factors, like age and overall health. This process involves lower doses of chemotherapy.

Treatment for Relapsed or Refractory AML

Some patients do not respond to treatment. Others respond at first, but over time, their AML returns and they

require further treatment. If you do not respond to primary treatment, it is called refractory disease. If this happens, you will be treated with different drugs that were not given to you in your first round of treatment.

When your disease returns after responding to treatment, it's called relapsed disease. Treatment for relapsed AML may include receiving the same drugs as newly-diagnosed patients or entirely different drugs.

If you have either relapsed or refractory AML, you may be given clinical trial options.

Side Effects of Treatment

When you begin treatment for AML, you may already have lower-than-normal levels of red blood cells, white blood cells, and/or platelets. While AML treatment kills AML cells, it also affects healthy cells so your blood cell counts may drop even further, which can result in:

- Anemia from a decrease in red blood cells
- Increased bleeding or bruising from a drop in platelet count
- Infection from a big drop in white blood cells that can cause a range of side effects. These side effects include fever or chills, coughing, sore throat, frequent/loose bowel movements, mouth sores, hair loss, rashes, and nausea.

The side effects may be severe but they usually go away once the treatment ends. Not everyone will have these side effects. There are treatments available to manage them and help you to be comfortable.

Long-Term and Late Side Effects

It is common to have long-term side effects that last for months or years after treatment ends. It is important to talk with your doctor about long-term effects that may be related to your treatment. Fatigue is a common example.

Late effects are medical problems that do not show up until years after treatment ends. You will need to see the doctor for follow-up care to detect any potential heart disease, fertility problems, thyroid problems, problems concentrating, and chronic fatigue.

Follow-Up Care

Medical follow-up is important for every AML survivor. At follow-up visits, the doctor will carefully check to see if more treatment is required using physical exams, blood tests and possibly marrow tests as well. You will likely have regular screenings for cancers other than AML as part of your follow-up care. Your medical team should provide you with a care plan listing the frequency of follow-up visits and the tests you will have at those visits.

You should seek medical advice if you feel “down” or “blue” or don’t want to do anything and your mood does not improve over time. Depression is an illness and should be treated even when you are also being treated for AML. Treatment for depression has benefits for people living with cancer, and you are not alone.

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