

CHRONIC MYELOGENOUS LEUKEMIA (CML)

»» What is CML?

CML is a cancer of the white blood cells. White blood cells fight infection and disease. In CML, the body makes too many white blood cells called **granulocytes** and does not stop making them. Some of the bone marrow stem cells never mature. They are called **blasts**. Over time, granulocytes and blasts crowd out the red blood cells and platelets in the bone marrow. Granulocytes do not work the way normal cells do. They cannot fight infection very well and keep normal cells from growing. Because this happens slowly, people with CML may not feel ill at first. But over time, CML

Other names for CML

- Chronic myeloid leukemia
- Chronic myelocytic leukemia
- Chronic granulocytic leukemia

can cause infections, bleeding problems, and anemia (loss of red blood cells) and threaten major organs, such as the spleen, if not treated.

Who gets CML?

Adults older than 50 years are most likely to get CML, but it can happen at any age.

What is the Philadelphia (Ph) chromosome?

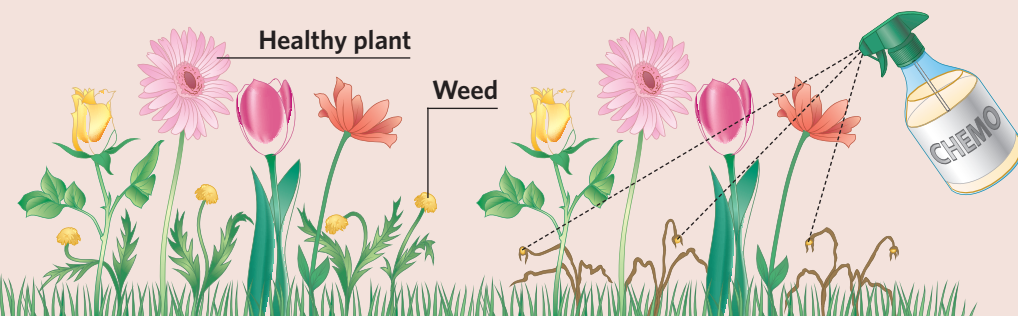
All cells in the body contain chromosomes. Most people with CML have a gene mutation called the **Philadelphia** or **Ph chromosome**. It is an abnormal chromosome that forms in bone marrow cells because of a genetic change. The genetic change leads to the uncontrolled growth of abnormal granulocytes. Treatment for CML aims to get rid of cells with the Ph chromosome to lower the number of abnormal granulocytes in the blood or bone marrow.

What happens with treatment?

CML is a slow-moving cancer that must be treated to keep it from getting worse. Treatment depends on the patient's age, the phase of the CML, and the patient's general health. CML has 3 phases (see chart to the right).

Cancer cells are like weeds in a garden.

Chemotherapy kills the weeds (the cancer cells) that crowd out healthy plants (the blood cells).



Phases of CML

Chronic phase	Cancer (blast) cells start to collect in the blood, bone marrow, and other body organs. Treatment at this stage kills enough cancer cells (cells with the Ph chromosome) to bring blood counts back to normal.
Accelerated phase	More blast cells appear in the blood and bone marrow. Treatment at this stage may kill cancer cells and bring the disease back to the chronic phase.
Blast crisis phase	In this acute phase, there are a lot of blast cells in the blood and bone marrow. CML becomes a fast-moving cancer that may spread to other organs.

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»» How is CML treated?

- **Targeted therapy** — uses drugs to stop cancer cells from growing and dividing. Targeted therapy for CML blocks the protein made by the Ph chromosome that leads to the abnormal growth of cancer cells
- **Chemotherapy** — uses drugs to kill cancer cells. Drugs that go into the bloodstream can reach cancer cells in most parts of the body
- **High-dose chemotherapy and radiation with stem cell transplantation** — uses high doses of drugs and radiation to kill all cancer cells in the body and replace them with stem cells that can make new blood cells
- **Biologic therapy** — uses drugs (such as interferon) that boost the body's ability to fight cancer

How do we know if the treatment is working?

Tests show how well treatment is working and check for any health problems.

Complete blood count	Measures the number of each type of blood cell
Cytogenetic testing	Looks for changes in the Ph chromosome in order to decide how much treatment is needed
Blood chemistry tests	Check for abnormal levels of certain chemicals in the body that could be signs of health problems

How to make it easier to get through treatment

The treatment for CML can cause side effects, such as:

- Infection
- Nausea
- Muscle pain
- Bleeding
- Vomiting
- Depression
- Hair loss
- Diarrhea
- Fatigue

Tips on how to cope with the side effects of treatment:

- Report signs of infection, such as a fever, and health concerns to the doctor or nurse right away
- Report signs of redness or skin changes after radiation therapy to the doctor or nurse
- Tell the medical team about all other medicines the patient is taking
- Try to drink lots of fluids, eat well, and take care of the teeth and gums
- Ask about medicines to control nausea, ease pain, or keep side effects from getting worse
- Share feelings with others

Where to learn more

The Leukemia & Lymphoma Society
www.lls.org
800-955-4572

National Cancer Institute
www.cancer.gov/leukemia
800-4-CANCER (422-6237)

People Living With Cancer
www.plwc.org
703-797-1914