

UNDERSTANDING CHRONIC MYELOID LEUKEMIA (CML):

A Rare Form of Blood Cancer

WHAT IS CML?

Leukemia is a blood cancer that forms in certain cells in a person's bone marrow. CML is one of four main types of leukemia; it is a result of a genetic mutation that takes place in early, immature versions of myeloid cells, which form red blood cells, platelets and most types of white blood cells. Subsequently, an abnormal gene called *BCR-ABL1* forms, turning the damaged cell into a CML cell. CML typically progresses slowly, but it can change into a fast-growing acute leukemia that is hard to treat.¹

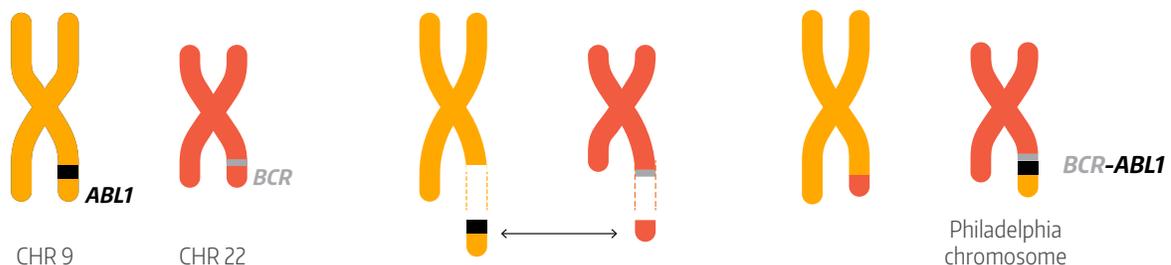
THERE ARE THREE PHASES OF CML

- **Chronic-Phase (CP):** the earliest phase of CML. Patients may not exhibit any signs or symptoms at the time of diagnosis.²
- **Accelerated-Phase (AP):** CP-CML may progress to AP-CML, if untreated. In AP, there is an increased number of immature blast cells, and symptoms are typically more obvious.²
- **Blast-Phase (BP):** AP-CML may progress to BP-CML, if untreated. In BP, blast cells spread from the blood and bone marrow to other tissues and organs throughout the body and may cause more severe symptoms in patients.²

As the phases progress, patients may experience increasing levels of white blood cells, very high or very low platelet counts and additional chromosomal changes.²

PHILADELPHIA CHROMOSOME

Almost every person with CML develops an abnormal gene, known as the Philadelphia chromosome. The Philadelphia chromosome is formed when pieces of chromosomes 9 and 22 switch with each other. This forms a longer chromosome 9 and a shorter chromosome 22, which leads to the development of *BCR-ABL1*.³



SIGNS AND SYMPTOMS⁴

The most common sign of CML is an abnormal white blood cell count. Symptoms are typically vague and more often caused by other things. They include:



Weakness



Fatigue



Night sweats



Weight loss



Fever



Bone or joint pain



Enlarged spleen



Pain or a sense of fullness in the belly

IF A PATIENT EXPERIENCES ANY OF THESE SYMPTOMS, A DOCTOR SHOULD BE NOTIFIED IMMEDIATELY.

RISK FACTORS

People are not born with CML and it has not proven to be hereditary. CML is caused by a damaged single bone marrow cell; there is no evidence that diet, lifestyle choices and/or exposure to infections increase risk.^{3,5}



CML is slightly more common in males than females³



Most cases appear in adults, and the risk increases with age^{1,3}



Exposure to high-dose radiation increases the risk of CML³

CML PREVALENCE

Though tens of thousands of people are diagnosed with leukemia every year, only about 15% have CML.⁶



- Approximately 8,450 people in the U.S. will be diagnosed with CML in 2020 and many will have good long-term results with appropriate treatment regimens⁶
- Average age at diagnosis is 64, and more than half of CML cases occur in patients 65 and older⁶

DIAGNOSIS AND TREATMENT



Diagnosing CML in its early stages can be difficult. There are currently no screening tests that are recommended to find CML early. In some cases, CML is identified through routine blood tests performed for other reasons.⁷

Initial treatment, as recommended by the National Comprehensive Cancer Network[®] (NCCN[®]),* is most commonly a daily oral drug therapy known as a tyrosine kinase inhibitor (TKI). TKIs identify, attack and block proteins that cause uncontrolled CML growth and often work well at controlling CML for long periods of time.⁸⁻¹⁰



Patients may also undergo a donor stem cell infusion, also known as an allogenic stem cell transplantation (ASCT). This is the best-documented treatment option for certain CML patients who do not respond to TKIs, though there can be serious complications and side effects associated with an ASCT.¹¹

Treatment options are chosen based on the phase of their disease (CP, AP or BP), their age and other prognostic factors, such as general health and response to therapies.⁸

1. American Cancer Society. What Is Chronic Myeloid Leukemia? <https://www.cancer.org/cancer/chronic-myeloid-leukemia/about/what-is-cml.html>. Accessed May 1, 2020.

2. Leukemia & Lymphoma Society. CML Phases. <https://www.lls.org/leukemia/chronic-myeloid-leukemia/diagnosis/cml-phases>. Accessed May 1, 2020.

3. Leukemia & Lymphoma Society. Chronic Myeloid Leukemia. <https://www.lls.org/leukemia/chronic-myeloid-leukemia>. Accessed May 1, 2020.

4. American Cancer Society. Signs and Symptoms of Chronic Myeloid Leukemia. <https://www.cancer.org/cancer/chronic-myeloid-leukemia/detection-diagnosis-staging/signs-symptoms.html>. Accessed May 1, 2020.

5. American Cancer Society. What Are the Risk Factors for Chronic Myeloid Leukemia? <https://www.cancer.org/cancer/chronic-myeloid-leukemia/causes-risks-prevention/risk-factors.html>. Accessed May 1, 2020.

6. American Cancer Society. Key Statistics for Chronic Myeloid Leukemia. <https://www.cancer.org/chronic-myeloid-leukemia/about/statistics.html>. Accessed April XX, 2020.

7. American Cancer Society. Can Chronic Myeloid Leukemia Be Found Early? <https://www.cancer.org/cancer/chronic-myeloid-leukemia/detection-diagnosis-staging/detection.html>. Accessed May 1, 2020.

8. American Cancer Society. Treating Chronic Myeloid Leukemia by Phase. <https://www.cancer.org/cancer/chronic-myeloid-leukemia/treating/treating-by-phase.html>. Accessed May 1, 2020.

9. Leukemia & Lymphoma Society. Tyrosine Kinase Inhibitor (TKI) Therapy. <https://www.lls.org/leukemia/chronic-myeloid-leukemia/treatment/tyrosine-kinase-inhibitor-tki-therapy>. Accessed May 1, 2020.

10. Referenced with permission from the NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines[®]) for Chronic Myeloid Leukemia V.4.2018. ©National Comprehensive Cancer Network, Inc. 2018. All rights reserved. Accessed May 1, 2020. To view the most recent and complete version of the guideline, go online to NCCN.org.

11. Leukemia & Lymphoma Society. Stem Cell Transplantation. <https://www.lls.org/leukemia/chronic-myeloid-leukemia/treatment/stem-cell-transplantation>. Accessed May 1, 2020.

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