



## Understanding Acute Myeloid Leukemia (AML): A Comprehensive Overview

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### INTRODUCTION

Acute Myeloid Leukemia (AML) is a type of cancer that affects the blood and bone marrow, leading to the rapid proliferation of abnormal myeloid cells. This article aims to provide a comprehensive overview of AML, including its causes, symptoms, diagnosis, treatment options, and the latest advancements in research and therapy. AML is a hematologic malignancy characterized by the uncontrolled growth of immature myeloid cells, which are precursors to red blood cells, white blood cells, and platelets. In AML, these abnormal cells accumulate in the bone marrow, crowding out healthy blood-forming cells and impairing their function. This can lead to a decrease in the production of normal blood cells, resulting in anemia, infections, and bleeding disorders. The exact cause of AML is not fully understood, but several factors may increase the risk of developing the disease. Certain genetic mutations, such as mutations in genes involved in cell cycle regulation (e.g., FLT3, NPM1) or DNA repair (e.g., TP53), are commonly associated with AML.

### DESCRIPTION

The symptoms of AML can vary depending on the severity of the disease and its effects on the body's blood cell counts. Common signs and symptoms may include fatigue and weakness, shortness of breath, pale skin (due to anemia), frequent infections, easy bruising or bleeding, fever and night sweats, bone pain or tenderness. Blood tests may reveal abnormal levels of white blood cells, red blood cells, and platelets, while bone marrow examination can confirm the presence of leukemia cells and determine their subtype and genetic characteristics. The treatment approach for AML depends on several factors, including the patient's age, overall health, and genetic profile of the leukemia cells. Treatment options may include chemotherapy is the mainstay of treatment for AML and typically involves the use of combination chemotherapy regimens to induce remission. These regimens may include

cytarabine and anthracycline drugs such as daunorubicin or idarubicin. For eligible patients, stem cell transplantation (also known as bone marrow transplantation) may be recommended as a consolidation therapy after achieving remission. Targeted therapies, such as tyrosine kinase inhibitors (e.g., midostaurin, gilteritinib) or monoclonal antibodies (e.g., gemtuzumab, ozogamicin) may be used to target specific genetic mutations or molecular pathways involved in AML. Participation in clinical trials evaluating novel agents or treatment approaches may be considered for patients with relapsed or refractory AML or for those who are not candidates for standard therapies.

### CONCLUSION

Acute Myeloid Leukemia is a challenging disease that requires a multidisciplinary approach to diagnosis and treatment. Advances in understanding the genetic and molecular mechanisms underlying AML have led to the development of targeted therapies and personalized treatment strategies, offering hope for improved outcomes. Through continued research, collaboration, and innovation we can strive to advance the field of hematology-oncology and provide better care and support for individuals living with AML. This can lead to a decrease in the production of normal blood cells, resulting in anemia, infections, and bleeding disorders. The exact cause of AML is not fully understood, but several factors may increase the risk of developing the disease. Certain genetic mutations, such as mutations in genes involved in cell cycle regulation (e.g., FLT3, NPM1) or DNA repair (e.g., TP53), are commonly associated with AML.

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### CONFLICT OF INTEREST

The author's declared that they have no conflict of interest.

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