

ADULT ACUTE MYELOID LEUKEMIA

Adult acute myeloid leukemia (AML) is a cancer of the blood and bone marrow. Bone marrow normally produces stem cells (immature cells) that develop into red blood cells, white blood cells and platelets. In AML, stem cells develop instead into a type of immature white blood cell called myeloblasts. They are abnormal leukemic cells and do not develop into healthy white blood cells. These cells build up in the bone marrow and blood so there is less room for healthy blood cells. Leukemia cells can spread outside the blood to other parts of the body, including the central nervous system, skin and gums. AML is also called acute myelogenous leukemia, acute myeloblastic leukemia, acute granulocytic leukemia, and acute nonlymphocytic leukemia. It usually gets worse quickly if it is not treated.

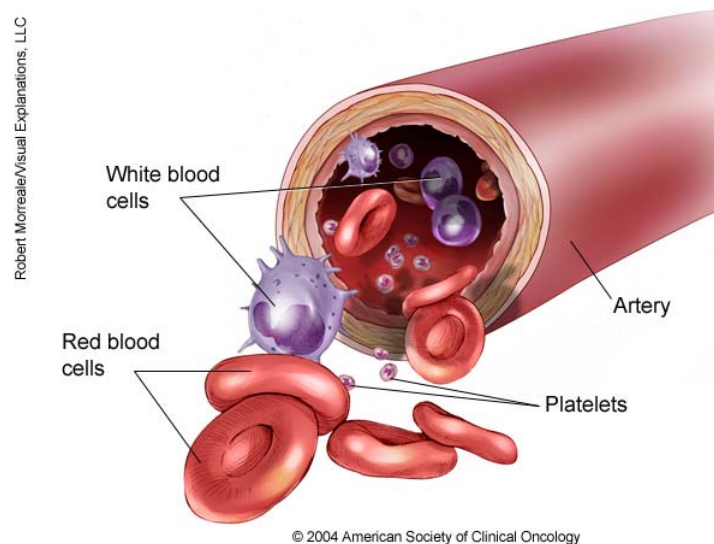
RISK FACTORS include:

- *Being male
- *Smoking, especially after age 60
- *Having had chemotherapy or radiation therapy treatments in the past
- *Having had treatment for childhood acute lymphoblastic leukemia (ALL) in the past
- *Being exposed to atomic bomb radiation or the chemical benzene
- *Having a history of a blood disorder such as myelodysplastic syndrome
- *Having a genetic disorder such as Down's syndrome

SYMPTOMS TO REPORT to a care provider:

- *Fever
- *Shortness of breath
- *Easy bruising or bleeding
- *Weakness or feeling tired
- *Weight loss
- *Loss of appetite
- *Petechiae (flat, pinpoint spots under the skin)

Early signs of AML may be like those caused by the flu or other common diseases.



DIAGNOSING ACUTE MYELOID LEUKEMIA may include the following tests and procedures:

- ***Physical exam** of entire body, including health habits and past illnesses and treatments
- ***Blood tests** of complete blood count and blood chemistry studies
- ***Peripheral Blood Smear** to look for blast cells, the number and kind of white blood cells, the number of platelets, and changes in the shape of blood cells
- ***Bone Marrow Aspiration and Biopsy** is the removal of a small piece of bone and bone marrow through a needle inserted usually in the hipbone to look for signs of cancer
- ***Cytogenetic Analysis** to look for changes in the chromosomes in the leukemic cells
- ***Immunophenotyping** to determine the subtype of AML by examining the types of antigens or markers on the surface of the cell

More tests and procedures are used to find out if the leukemia has spread from the blood and bone marrow:

- ***Chest x-ray** with a high energy beam that goes through body onto film to make pictures of areas inside the body
- ***Lumbar puncture** to collect cerebrospinal fluid from the spinal column
- ***Ultrasound exam** uses high-energy sound waves to bounce off internal tissues or organs in the abdomen and make echoes. The echoes form a picture called a sonogram.

TREATMENT OPTIONS

There is no standard staging system for adult AML. The disease is described as untreated, in remission, or recurrent. Treatment options and the chance of recovery depend on:

- *The patient's age
- *The subtype of AML, or how mature the cancer cells are at the time of diagnosis and how different the cancer cells are from normal cells
- *Whether chemotherapy has been given in the past to treat a different type of cancer
- *Whether there is a history of a blood disorder such as myelodysplastic syndrome
- *Whether the cancer has spread to the brain or spinal cord
- *Whether the cancer has been treated before or recurred, or come back

Treatment of AML usually has two phases. The first phase is **Remission Induction Therapy**.

The purpose is to kill the leukemia cells in the blood and bone marrow. This puts the leukemia into remission.

The second phase is **Consolidation Therapy** which includes several additional cycles of intensive chemotherapy. The purpose is to kill any remaining leukemia cells that may not be active but could begin to regrow and cause a relapse.

STANDARD TREATMENTS

Chemotherapy uses drugs to kill cancer cells or stop the cells from dividing and spreading. It is called systemic chemotherapy when it is given by mouth or injected into a vein or muscle. It is called intrathecal or regional chemotherapy when it is placed directly into the spinal column to treat or, in some cases, prevent the spread of leukemia cells into the central nervous system. The way the chemotherapy is given depends on the subtype of cancer and whether it has spread to the brain and spinal cord. Chemotherapy can use one or a combination of drugs.

Radiation therapy is a cancer treatment that uses high-energy x-rays or other types of radiation to kill cancer cells. External radiation therapy uses a machine outside the body to send radiation towards the cancer. The way the radiation is given depends on the type and phase of leukemia.

Stem cell transplant is a method of giving chemotherapy and replacing blood-forming cells that are abnormal or destroyed by the cancer treatment. Stem cells are immature blood cells that are removed from the blood or bone marrow of the patient or donor and then frozen or stored. The stem cells are thawed and given back to the patient through an infusion after the high-dose chemotherapy and radiation therapy are completed. The reinfused stem cells grow into and restore the body's blood cells.

Other drug therapy such as arsenic trioxide and all-trans retinoic acid (ATRA) are anticancer drugs that kill leukemia cells, stop the leukemia cells from dividing, or help the leukemia cells mature into white blood cells. These drugs are used in the treatment of acute promyelocytic leukemia.

New types of treatment are being tested in clinical trials. Biologic therapy is a treatment that uses the patient's own immune system to fight cancer. This is also called biotherapy or immunotherapy. Substances made by the body or made in a laboratory are used to boost, direct, or restore the body's natural defenses against cancer. One type of biologic therapy is monoclonal antibody therapy. This therapy uses antibodies made in the laboratory from a single type of immune system cell. Monoclonal antibodies are given by infusion. They may be used alone or in combination with chemotherapy or radiation therapy.