

Acute Lymphoblastic Leukemia for the Pediatric Patient

What is acute lymphoblastic leukemia?

Leukemia is a cancer that involves the blood-forming tissue of the bone marrow, spleen, and lymph nodes. The bone marrow controls the production of normal blood cells. In leukemia the normal production of blood cells breaks down. The bone marrow starts producing large numbers of abnormal white cells. These abnormal, immature cells, called lymphoblasts or blasts, crowd out other blood cells in the blood marrow, blood stream, and lymph system. The cancerous cells can also invade other organs such as the spinal cord, brain, and testicles.

Childhood acute lymphoblastic leukemia (also called ALL) is the most common form of leukemia in children and the most common kind of childhood cancer. The average age of onset is 4 years, but ALL can affect children of all ages. ALL affects more Caucasians than African Americans and more males than females.

What are the symptoms of acute lymphoblastic leukemia?

Early signs of ALL may be similar to those of the flu or other common diseases, such as a fever that won't go away, feeling weak or tired all the time, aching bones or joints, or swollen lymph nodes. Common presenting symptoms include:

- Pale skin and weakness due to low hemoglobin levels (anemia)
- Excessive bruising and nosebleeds due to a low platelet count (thrombocytopenia)
- Fever and persistent infections due to a decreased number of normal white cells (neutropenia)
- Fatigue, weight loss, bone pain, abdominal pain, and enlargement of the lymph nodes, liver, and spleen may occur

How is acute lymphoblastic leukemia diagnosed and treated?

If your child has symptoms of leukemia, his or her doctor may order blood tests to count the number of each of the different kinds of blood cells. If the results of the blood tests are not normal, a bone marrow aspiration and biopsy may be performed to determine what kind of leukemia your child has and to plan the best treatment. A spinal tap may also be done to determine if leukemia cells are present in the spinal cord and brain.

The primary treatment for ALL is chemotherapy. Treatment usually lasts 2-3 years. Chemotherapy drugs may be taken by mouth, injected into a vein or muscle. They may also be injected into the fluid that surrounds the brain and spinal cord (intrathecal chemotherapy). Radiation therapy may be used in certain cases and bone marrow transplantation is needed in few cases.