

Acute Lymphoblastic Leukaemia

What is Acute Lymphoblastic Leukaemia (ALL)?

Leukaemia is a cancer of the white blood cells. About 85% of children with leukaemia have **A**cute **L**ymphoblastic **L**eukaemia. This is a cancer of immature lymphocytes (a type of white cell) called lymphoblasts or blast cells. The blast cells accumulate in the blood and crowd out the other blood cells such as the red blood cells, other white blood cells and platelets. The number of these good cells in the circulating blood becomes greatly reduced. This means the remaining red blood cells cannot transport enough oxygen to the body's tissues and organs. The other white blood cells cannot fight infections and the platelets cannot 'plug' all the leaks in the blood vessels.

What are the symptoms?

A patient with leukaemia may experience some of the symptoms related to these reduced cell numbers. Red blood cell shortage could lead to tiredness, sometimes breathlessness and pallor (anaemia). White blood cell shortage could lead to repeated or unusual infections. Platelet shortage could lead to red skin blotches (tiny bleeds in blood vessels), numerous bruises often unexplainable; bleeding gums and nose bleeds.

How does the Doctor make the diagnosis?

Leukaemia is diagnosed by two tests:

- Blood test
- Bone marrow biopsy

These tests are explained in the procedure section of this folder.

How is ALL treated?

ALL is treated with chemotherapy, which aims to eradicate all leukaemia cells. As some of these drugs cannot enter the fluid that surrounds the brain and spinal cord, they must be injected directly into the fluid through a lumbar puncture, even if no abnormal cells have been detected there.

The exact treatment your child will receive is decided by their risk factors at diagnosis and how they respond to the initial therapy.

Your doctor will discuss how your child's risk factors decided their treatment.

There are four risk categories Standard, Medium, High and Very High risk. The risk level is determined by the following:

- your child's response to prednisolone
- their cytogenetics (chromosome studies done on blood and/or bone marrow),
- your child's age,
- their white cell count at diagnosis
- the presence of leukaemia cells in the spinal fluid
- their bone marrow remission status at Day 33 (% of blast cells [leukaemia cells] present in the bone marrow)
- and the level of minimal residual disease from the day 33 & day 79 bone marrow biopsy.

As test are done along the way it means that the risk classification could change depending on the results and this is done to give your child the best possible treatment for their risk level.

Induction therapy

All patients will receive induction therapy regardless of their risk classification. This is started as soon as a complete diagnosis is confirmed. The initial aim of treatment is to rapidly reduce the number of blast cells in the blood and bone marrow to achieve a remission of the disease. This means that no abnormal cells can be seen in the blood tests or in the bone marrow.

The treatment your child will receive and the duration of treatment after induction is decided by the risk factors outlined above and your doctor will discuss these with you. There are various phases of treatment referred to as consolidation, intensification and maintenance.

Supportive Care

This treats the symptoms that have been caused by a lack of normal cells, through the disease itself and by the chemotherapy.

Transfusions of red blood cells and platelets are usually necessary to replace the normal cells (more detailed information about transfusions is located in the treatment section of this folder).

Your child will be at an increased risk of infection and will be treated promptly with antibiotics at any sign of infection.

There may be times that your child will require nutritional support and further information can be found in the treatment section of this folder.

How are the drugs given?

Some of the drugs are given in tablet or syrup form, some by subcutaneously injection but the main treatment consists of drugs given by injection into a vein. To make this easier, your child may have a special intravenous line, called a Port or Central Line, inserted (Please ask for the section on Central Venous Access Devices for more information).

The Aim of Treatment

The aim of treatment for children with ALL is cure. Cure rates depend on age, subtype of ALL and the risk category at diagnosis. With treatment approximately 70 - 80% of children will recover to the extent that they become physically normal, with normal blood and marrow appearance. This is remission. Recurrence of the disease can still occur but with ongoing treatment the great majority of these children will have a sustained remission and a cure is achieved.

Unfortunately, some children will relapse despite the treatment being given. A relapse can occur at any time during the treatment and sometimes months to years after the treatment has completed.

There are still treatments available for a child who has relapsed. This may include chemotherapy and/or bone marrow transplant.

Your doctor will discuss this further with you at the time if required.

Where can I find more information?

- From your doctor or nurse
- Leukaemia Foundation
- SA Cancer Council
- Book, video and CD-Rom list in this Folder
- Website list in this Folder