CMScript
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CMS
Council for Medical Schemes

Acute Lymphoblastic Leukaemia

Leukaemia refers to cancers of the blood cells. The type of blood cell that becomes cancerous, and the rate at which it grows, determines the type of leukaemia. Leukaemia occurs mostly in adults over the age of 55 years; however, it is also the most common type of cancer in children younger than 15 years. According to the South African National Cancer Registry, in 2012, there was a total of 380 males and 285 females diagnosed with Leukaemia. The registry however does not differentiate between the types of Leukaemia.

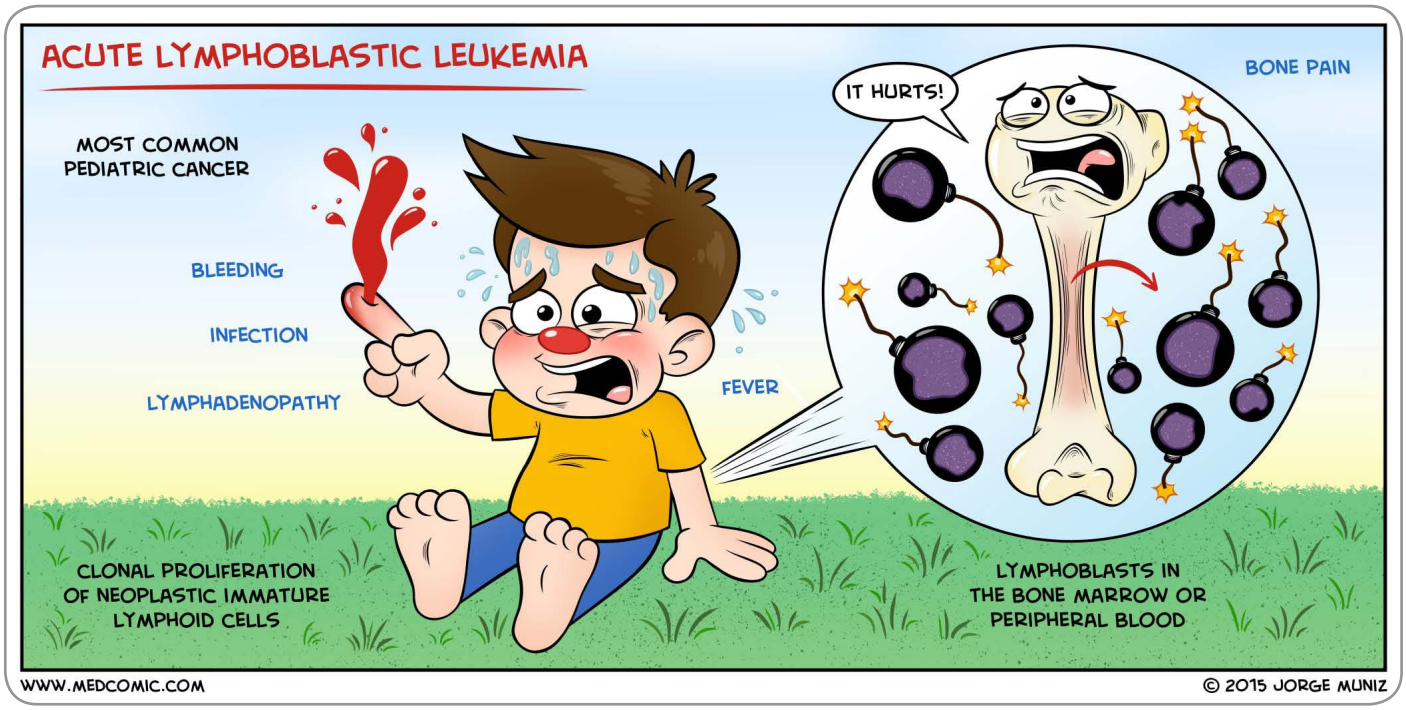

Figure 1: The signs and symptoms of Acute Lymphoblastic Leukaemia

What is Acute lymphoblastic leukaemia?

Acute lymphoblastic leukaemia (ALL) cancer affects the blood and bone marrow. The main effect of ALL is the overproduction of immature white blood cells, called lymphoblast or leukaemic blasts, which results in a high number of abnormal white blood cells in your blood circulation. It can spread to the lymph nodes, spleen, liver, central nervous system (CNS), and other organs. The uncontrolled production of the white cells can be a result of a cancerous mutation (a change in the cell DNA) of a myelogenous (cells present in bone marrow) or lymphogenous cell (cells present in lymph tissue and fluid).

ALL progresses quickly if not treated. Generally, the more undifferentiated (a cell that has yet to develop into a particular cell variant) the cell, the more acute is the leukaemia, often leading to death within a few months if untreated. With some of the more differentiated (when a less specialised cell becomes a more specialised cell) cells, the process can be chronic, sometimes developing slowly over 10 to 20 years. Leukaemic cells, especially the very undifferentiated cells, are usually unable to provide the normal protection against infection.

What causes ALL?

Specific causes of ALL are unknown but it is thought that ALL is a result of mutations in one or more of the genes that normally control blood cell development. The mutations result in abnormal cell growth.

What are the signs and symptoms of ALL?

The main symptoms of ALL (Figure 1 on page 1) are caused by a lack of normal circulating blood cells. ALL develops quickly, so people are usually only unwell for a short period of time (it could be days, or weeks) before they are diagnosed. Below is a list of common ALL symptoms:

- Anaemia due to a lack of red cells
- General weakness
- Feeling tired (fatigue)
- High temperature (fever)
- Frequent infections
- Bruising or bleeding easily
- Weight loss
- Swollen lymph nodes
- Pain in bones or joints
- Pale skin

Effects of leukaemia on the Body

Leukemic cells from the bone marrow may reproduce so greatly that they invade the surrounding bone, causing pain and, eventually, a tendency for bones to fracture easily.

Almost all leukaemias eventually spread to the spleen, lymph nodes, liver, and other vascular regions, regardless of whether the origin of the leukaemia is in the bone marrow or the lymph nodes.

What are the risk factors for developing ALL?

Research on the causes of ALL is ongoing and several risk factors have been identified that may put some people at an increased risk of developing ALL. These include exposure to:

- very high doses of radiation either accidentally (nuclear accident) or therapeutically (to treat other cancers)
- industrial chemicals like benzene, pesticides, and certain types of chemotherapy used to treat other cancers
- certain types of viral infections and the way in which the immune system reacts may play a role in the development of some types of ALL
- people with certain genetic disorders like Down's syndrome and Fanconi's anaemia may have a higher than average risk of developing ALL.

How is ALL diagnosed?

Physical examination and history:

A history of the patient's health habits and past illnesses and treatments will be taken. A body examination will also be carried out to check general signs of health, including checking for signs of disease, such as lumps or anything else that seems unusual.

Several examinations may be done to make a diagnosis. These may include blood tests, bone marrow tests, x-rays, sonars and scans, and a lumbar puncture test.

Blood tests (full blood count) can check:

- The number of red blood cells and platelets.
- The number and type of white blood cells.
- The amount of hemoglobin (the protein that carries oxygen) in the red blood cells.
- The portion of the sample made up of red blood cells.

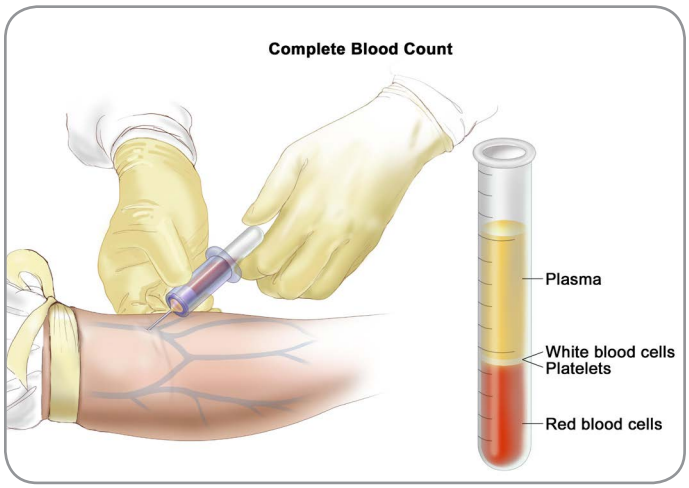

Figure 2: Blood collection for full-blood count

Bone marrow aspiration and biopsy:

The test checks whether there are cancer cells in your bone marrow.

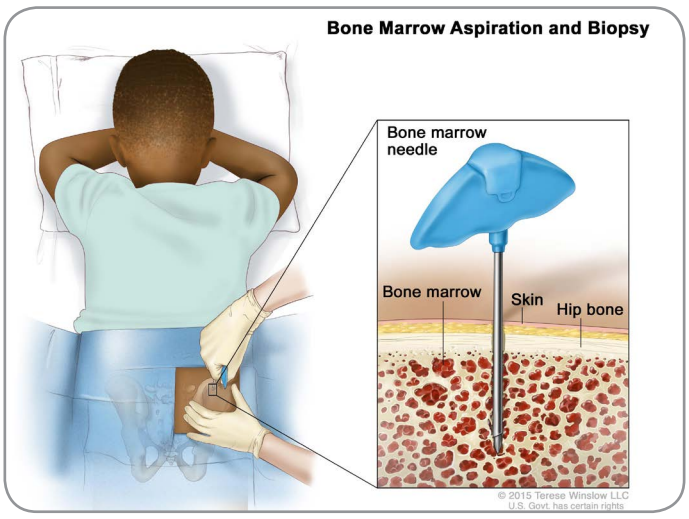

Figure 3: Bone marrow aspiration and biopsy

What medical treatment is available for ALL?

ALL is treated with chemotherapy, radiation therapy and bone marrow transplant. Chemotherapy is the main treatment for ALL. Chemotherapy includes a combination of drugs, including steroids, typically given in several cycles with a rest period of a few weeks in between. Treatment for ALL usually takes between 2 and 3 years.

Treatment for ALL is divided into 3 phases. These are:

1. Remission Induction therapy
2. Consolidation therapy
3. Maintenance therapy

Remission induction therapy:

After diagnosis an intensive course of treatment to bring about, or induce, a remission is administered. Hospitalisation for the first phase of treatment is necessary. In certain cases, a more intensive form of therapy may be required to treat the disease more effectively. The therapy should result in no evidence of leukaemic cells in the blood or bone marrow; as well as the restoration of normal blood cell production and count.

Consolidation therapy:

Aimed at destroying any remaining leukemia in the body.

Maintenance therapy:

The aim of maintenance therapy is to help keep ALL in remission and prevent it from reappearing in the future. Maintenance therapy includes chemotherapy tablets, taken daily and/or weekly, and blocks of injections of chemotherapy with courses of cortico-steroids. Maintenance therapy typically lasts for several months.

How can ALL be prevented?

Most risk factors for ALL are beyond control. Avoiding exposure to radiation may reduce risk. However, it may be impossible to avoid radiation from some medical treatments, such as radiation therapy for another form of cancer.

The risk of many types of cancer can be reduced with lifestyle changes to avoid certain risk factors, but there is no known way to prevent most cases of leukaemia at the moment.

Most people who get acute lymphocytic leukaemia have no known risk factors, so there is no way to prevent these leukaemias from developing.

What is covered at PMB level of care?

Prescribed Minimum Benefits refer to the benefits as stated in Section 29 (1) (of) the Medical Schemes Act, No. 131 of 1998 (the Act). ALL is a PMB condition under Diagnosis and Treatment Pair (DTP) code 901S.

This DTP code refers to Acute leukaemia and lymphomas. The treatment component specified for this condition according to the PMB Regulations is *"Medical management, which includes chemotherapy, radiation therapy, and bone marrow transplantation".*

In terms of chemotherapy and radiation therapy, the guidelines and treatment protocols that are used in the State sector constitute PMB level of care.

In addition, Explanatory note 4 of the PMB Regulations explains that:

"The following conditions would also apply to the bone marrow transplantation component of the prescribed minimum benefits:

(i) the patient should be under 60 years of age

(ii) allogeneic bone marrow transplantation should only be considered where there is an HLA matched family donor

(iii) the patient should not have relapsed after a previous full course of chemotherapy

(iv) (points (i) and (ii) shall also apply to bone marrow transplantation for non-malignant diseases).

Allogeneic bone marrow transplantation means that bone marrow from another person is used. It is only part of the PMB level of care if the other person is an Human Leukocyte Antigen (HLA) matched family donor. If the donor is not a family member, the transplant is not included in the PMBs and the medical schemes do not have to pay for the transplant.

The medical schemes are allowed to have protocols to be able to make funding decisions for the diagnosis, treatment and care of PMBs. It is important for the treating doctor to register the member's condition with the medical scheme to allow for funding of ALL as PMB. If additional tests, consultations and treatment are required, the doctor should be provide the medical scheme with motivation for further funding.

The Council for Medical Schemes ensures adherence to the Medical Schemes Act 131 of 1998 and its Regulations.

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WHAT ARE PRESCRIBED MINIMUM BENEFITS?

Prescribed Minimum Benefits (PMBs) are defined by law. They are the minimum level of diagnosis,treatment, and care that your medical scheme must cover – and it must pay for your PMB condition/s from its risk pool and in full. There are medical interventions available over and above those prescribed for PMB conditions but your scheme may choose not to pay for them. A designated service provider (DSP) is a healthcare provider (e.g. doctor, pharmacist, hospital) that is your medical scheme's first choice when you need treatment or care for a PMB condition. You can use a non-DSP voluntarily or involuntarily but be aware that when you choose to use a non-DSP, you may have to pay a portion of the bill as a co-payment. PMBs include 270 serious health conditions, any emergency condition, and 25 chronic diseases; they can be found on our website

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