



Lymphoma

It is a type of blood cancer. It can develop at any age. Lymphoma is nearly always treatable and people generally live well for many years after their diagnosis.

Common symptoms of lymphoma

1-Swollen lymph nodes 2-Fatigue 3-Unexplained weight loss 4-Infections
5-Sweats 6-Itching

Causes of lymphoma

Lymphoma develops **when lymphocytes grow out of control**. They divide in an abnormal way or don't die when they should, causing a group of lymphocytes to build up. Most of the time, it's not possible to know the cause of lymphoma. This is because scientists think the **genetic changes** that stop cells from listening to their control signals happen by chance.

Some people with conditions that affect their immune system have a higher risk of developing lymphoma. This includes people with HIV (human immunodeficiency virus) and those who have had an organ transplant.

Risk factors

Factors that can increase the risk of lymphoma include:

1- age. Some types of lymphoma are more common in young adults, while others are most often diagnosed in people over 55.

2-Being male. Males are slightly more likely to develop lymphoma than are females.

3-Having an impaired immune system. Lymphoma is more common in people with immune system diseases or in people who take drugs that suppress their immune system.

4-Developing certain infections. Some infections are associated with an increased risk of lymphoma, including the Epstein-Barr virus and Helicobacter pylori infection.

Types of lymphoma

There are two main types of lymphoma: **Hodgkin lymphoma** and **non-Hodgkin lymphoma** (NHL). Within these, there are lots of subtypes. Based on symptoms, the doctors might suspect the patients have lymphoma. Two types of it affects slightly more males than females.

Hodgkin lymphoma: it can develop at any age. Most people are diagnosed between the ages of 15 and 34, or over 60.

Non-Hodgkin lymphoma (NHL): Almost people each year are diagnosed with chronic lymphocytic leukaemia (CLL), which is sometimes classified as a form of



NHL. The risk of developing NHL increases with age. Most people who are diagnosed are over 55. The highest rate of diagnosis is in people aged 80 to 84.

Non-Hodgkin lymphoma can be classified according to how quickly it's growing. '**Low-grade**' or 'indolent' NHL **grows slowly**. '**High-grade**' or 'aggressive' NHL **grows quickly**.

Also it can be divided into two main types:

- **B-cell non-Hodgkin lymphomas** develop from B lymphocytes (B cells). B cells make **antibodies** to fight infection.
- **T-cell non-Hodgkin lymphomas** develop from T lymphocytes (T cells). T cells attack viruses and cancers.

B-cell lymphomas are much more common than T-cell lymphomas.

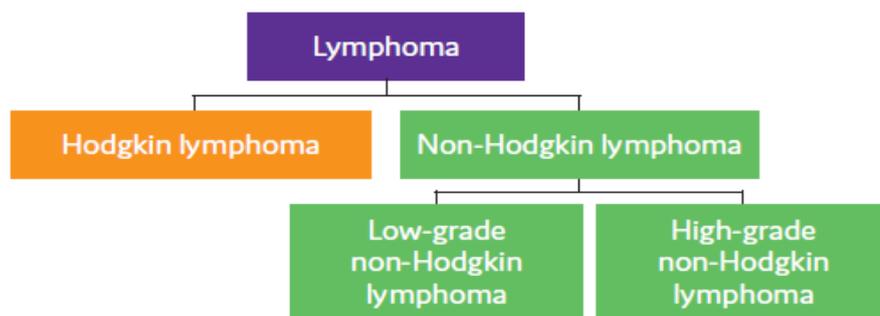


Figure: The main types of lymphoma

Lymphoma diagnosis

1- Biopsy

In general, lymphoma can't be confirmed without a small operation 'biopsy'. It takes a sample of tissue from your body. A doctor called a 'pathologist' looks at it under a microscope to check for abnormal cells.

2- Blood tests

During a blood test, a sample of your blood is taken. It is then sent to be tested in a laboratory. Blood tests help doctors find out more about your general health and how well your organs are working. This information helps to plan your treatment.

3- Bone marrow biopsy

Bone marrow is where blood cells are made, in the center of some of your large bones. You might have a bone marrow biopsy to check if there are lymphoma cells in your bone marrow. This can affect which treatment you need.

4- Scans and X-rays

Scans give detailed pictures of the organs and lymph nodes



in your body. Some types of scan are better than others at checking different parts of the body.

Different scans work in different ways:

- **X-rays** use high-energy radiation
- **CT** or **CAT** scans use X-rays and a computer
- **MRI** scans use magnetic waves
- **ultrasound** scans use sound waves.

Stages of lymphoma:

- 1- One set of lymph nodes is affected
- 2- Two sets of lymph nodes on the same side of the **diaphragm** are affected
- 3- Lymph nodes on both sides of the diaphragm affected
- 4- Organs or bone marrow also affected (having started in nodes)

Stages 1 and 2 called 'early stage' lymphoma. Stages 3 and 4 are often said to be at an 'advanced stage'. The lymphatic system spreads throughout your body so it's not uncommon for lymphoma to be advanced when it is diagnosed. A higher stage does not mean it's not treatable.

References:

- 1-Grommes, C., Nayak, L., Tun, H. W., & Batchelor, T. T. (2019). Introduction of novel agents in the treatment of primary CNS lymphoma. *Neuro-oncology*, 21(3), 306-313.
- 2-Jiang, M., Bennani, N. N., & Feldman, A. L. (2017). Lymphoma classification update: B-cell non-Hodgkin lymphomas. *Expert review of hematology*, 10(5), 405-415.

Low-grade NHL	High-grade NHL
Most commonly affects people aged over 60.	Most commonly affects people aged over 50.
Most common types are CLL, follicular lymphoma and marginal zone lymphoma.	Most common type is diffuse large B-cell lymphoma (DLBCL).
Might not need treatment straightaway (known as 'active monitoring' – see page 37).	Treatment often starts soon after a diagnosis.
Can come back (relapse) after treatment, so treatment usually aims to control growth.	The aim of treatment is usually to get rid of the lymphoma.