



NON-HODGKIN LYMPHOMA

Non-Hodgkin lymphoma is cancer that begins in cells of the immune system. The immune system fights infections and other diseases. The lymphatic system is part of the immune system and includes the **Lymph vessel, Lymph** and **Lymph nodes**.

Other parts of the lymphatic system include the tonsils, thymus, and spleen. Lymphatic tissue is also found in other parts of the body including the stomach, skin, and small intestine.

NON-HODGKIN LYMPHOMA CELLS

Non-Hodgkin lymphoma begins when a lymphocyte (usually a B cell) becomes abnormal. The abnormal cell divides to make copies of itself. The new cells divide again and again, making more and more abnormal cells. The abnormal cells do not die when they should. They do not protect the body from infections or other diseases. The build up of extra cells often forms a mass of tissue called a growth or tumour.

RISK FACTORS

In general, the risk factors for Non-Hodgkin lymphoma include the following:

- **Weakened immune system**
- **Certain infections:** Having certain types of infections increases the risk of developing lymphoma. However, lymphoma is not contagious. You cannot catch lymphoma from another person. The following are the main types of infection that can increase the risk of lymphoma:

—**Human immunodeficiency virus (HIV):** HIV is the virus that causes AIDS. People who have HIV infection are at much greater risk of some types of Non-Hodgkin lymphoma.

—**Epstein-Barr virus (EBV):** In Africa, EBV infection is linked to Burkitt lymphoma.

—**Helicobacter pylori:** *H.pylori* are bacteria that can cause stomach ulcers. They also increase a person's risk of lymphoma in the stomach lining.

—**Human T-cell leukemia/lymphoma virus (HTLV-1):** Infection with HTLV-1 increases a person's risk of lymphoma and leukemia.

—**Hepatitis C virus:** Some studies have found an increased risk of lymphoma in people with hepatitis C virus.

- **Age:** Although Non-Hodgkin lymphoma can occur in young people, the chance of developing this disease goes up with age. Most people with Non-Hodgkin lymphoma are older than 60.

- Researchers are studying obesity and other possible risk factors for Non-Hodgkin lymphoma.
- People who work with herbicides or certain other chemicals may be at increased risk of this disease.
- Researchers are also looking at a possible link between using hair dyes before 1980 and Non-Hodgkin lymphoma.

SYMPTOMS

Non-Hodgkin lymphoma can cause many symptoms:

- Swollen, painless lymph nodes in the neck, armpits, or groin
- Unexplained weight loss
- Fever
- Soaking night sweats
- Coughing, trouble breathing, or chest pain
- Weakness and tiredness that do not go away
- Pain, swelling, or a feeling of fullness in the abdomen

DIAGNOSIS

You may have some of the following exams and tests:

- **Physical exam:** Your doctor checks for swollen lymph nodes in your neck, underarms, and groin. Your doctor also checks for a swollen spleen or liver.
- **Blood tests:** The lab does a complete blood count to check the number of white blood cells. The lab also checks for other cells and substances, such as lactate dehydrogenase (LDH). Lymphoma may cause a high level of LDH.
- **Chest x-rays:** You may have x-rays to check for swollen lymph nodes or other signs of disease in your chest.
- **Biopsy:** A biopsy is the only sure way to diagnose lymphoma. Your doctor may remove an entire lymph node (excisional biopsy) or only part of a lymph node (incisional biopsy). A thin needle (fine needle aspiration) usually cannot remove a large enough sample for the pathologist to diagnose lymphoma. Removing an entire lymph node is best.

TYPES OF NON-HODGKIN LYMPHOMA

When lymphoma is found, the pathologist reports the type. There are many types of lymphoma. The most common types are diffuse large B-cell lymphoma and follicular lymphoma. Lymphomas may be grouped by how quickly they are likely to grow:

- Indolent (also called low-grade) lymphomas grow slowly. They tend to cause few symptoms.
- Aggressive (also called intermediate-grade and high-grade) lymphomas grow and spread more quickly. They tend to cause severe symptoms. Over time, many indolent lymphomas become aggressive lymphomas.

STAGING

Staging may involve some of these tests:

- **Bone marrow biopsy**
- **CT scan**
- **MRI**
- **Ultrasound**
- **Spinal tap**
- **PET scan**



The stage is based on where lymphoma cells are found (in the lymph nodes or in other organs or tissues). The stage also depends on how many areas are affected. The stages of Non-Hodgkin lymphoma are as follows:

- **Stage I:** The lymphoma cells are in one lymph node group (such as in the neck or underarm). Or, if the abnormal cells are not in the lymph nodes, they are in only one part of a tissue or organ (such as the lung, but not the liver or bone marrow).
- **Stage II:** The lymphoma cells are in at least two lymph node groups on the same side of (either above or below) the diaphragm. Or, the lymphoma cells are in one part of an organ and the lymph nodes near that organ (on the same side of the diaphragm). There may be lymphoma cells in other lymph node groups on the same side of the diaphragm.
- **Stage III:** The lymphoma is in lymph nodes above and below the diaphragm. It also may be found in one part of a tissue or an organ near these lymph node groups.
- **Stage IV:** Lymphoma cells are found in several parts of one or more organs or tissues (in addition to the lymph nodes). Or, it is in the liver, blood, or bone marrow.
- **Recurrent:** The disease returns after treatment. In addition to these stage numbers, your doctor may also describe the stage as A or B:
 - A:** You have not had weight loss, drenching night sweats, or fevers.
 - B:** You have had weight loss, drenching night sweats, or fevers.

TREATMENT

The choice of treatment depends mainly on the following:

- The type of Non-Hodgkin lymphoma (for example, follicular lymphoma)
- Its stage (where the lymphoma is found)
- How quickly the cancer is growing (whether it is indolent or aggressive lymphoma)
- Your age
- Whether you have other health problems

If you have indolent Non-Hodgkin lymphoma without symptoms, you may not need treatment for the cancer right away. The doctor watches your health closely so that treatment can start when you begin to have symptoms. Not getting cancer treatment right away is called **watchful waiting**. If you have indolent lymphoma with symptoms, you will probably receive chemotherapy and biological therapy. Radiation therapy may be used for people with Stage I or Stage II lymphoma.

If you have aggressive lymphoma, the treatment is usually chemotherapy and biological therapy. Radiation therapy also may be used. If Non-Hodgkin lymphoma comes back after treatment, doctors call this a relapse or recurrence. People whose lymphoma comes back after treatment may receive high doses of chemotherapy, radiation therapy, or both, followed by stem cell transplantation.

TIPS:



Second Opinion - Before starting treatment, you might want a second opinion about your diagnosis and your treatment plan.

Supportive Care - Non-Hodgkin lymphoma and its treatment can lead to other health problems. You may receive supportive care to prevent or control these problems and to improve your comfort and quality of life during treatment. You may receive antibiotics and other drugs to help protect you from infections.

Nutrition and Physical Activity - It is important for you to take care of yourself by eating well and staying as active as you can. Many people find they feel better when they stay active. Walking, yoga, swimming, and other activities can keep you strong and increase your energy.

Follow-up Care - You will need regular checkups after treatment for Non-Hodgkin lymphoma. Your doctor will watch your recovery closely and check for recurrence of the lymphoma.

SOURCES OF SUPPORT

- Doctors, nurses, and other members of your health care team can answer many of your questions about treatment, working, or other activities.
- Social workers, counsellors, or members of the clergy can be helpful if you want to talk about your feelings or concerns.
- Support groups
- Cancer Institutions such as the Africa Cancer Foundation and Faraja Cancer Support Trust

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