

UNDERSTANDING LYMPHOMA

Lymphoma is a cancer that starts in cells that are part of the body’s immune system. These are the white blood cells called lymphocytes. There are two types of lymphocytes: B cell and T cell. B cells make proteins called antibodies to help protect the body from germs (bacteria and viruses). There are many types of T cells. Some T cells destroy germs or abnormal cells in the body. Other T cells help boost or slow the activity of other immune system cells.

There are two main types of lymphoma: Hodgkin lymphoma (HL) and Non-Hodgkin lymphoma.

TYPES OF LYMPHOMA

Hodgkin Lymphoma (HL):

Although Hodgkin lymphoma can start almost anywhere, most often it starts in lymph nodes in the upper part of the body. The most common sites are in the chest, neck, or under the arms.

Hodgkin lymphoma most often spreads through the lymph vessels from lymph node to lymph node. Rarely, late in the disease, it can invade the bloodstream and spread to other parts of the body, such as the liver, lungs, and/or bone marrow.

Hodgkin lymphoma usually starts in B cell lymphocytes. **Classic Hodgkin lymphoma (cHL)** accounts for more than 9 in 10 cases of Hodgkin lymphoma in developed countries. The cancer cells in cHL are called Reed-Sternberg cells, which are usually an abnormal type of **B lymphocyte**.

Enlarged lymph nodes in people with cHL usually have a small number of Reed-Sternberg cells with a lot of normal immune cells around them. These other immune cells cause most of the swelling in the lymph nodes.

Classic HL has 4 subtypes:

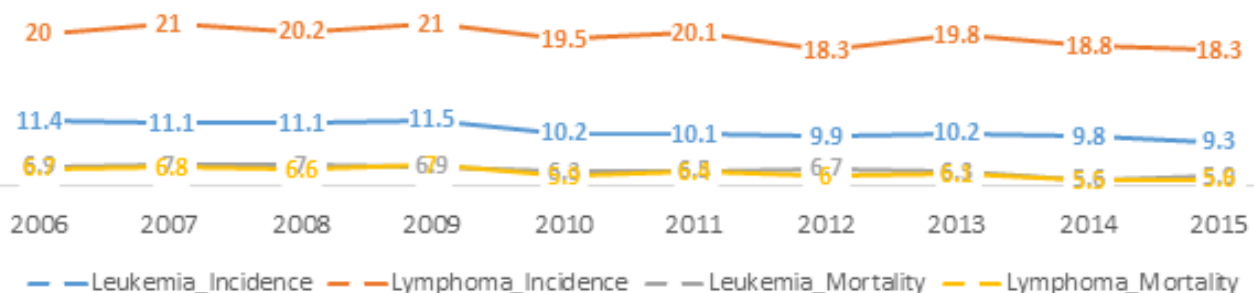
Nodular sclerosis (NSCHL) is the most common type of Hodgkin disease in teens and young adults, but it can occur in people of any age. It tends to start in lymph nodes in the neck or chest.

Mixed cellularity Hodgkin lymphoma or MCCHL is the second most common type, found in about 4 out 10 cases, and is seen mostly in people with HIV , and in children or the elderly.

Lymphocyte-rich Hodgkin lymphoma is not very common, usually occurs in the upper half of the body, and rarely found in more than a few lymph nodes.

LYMPHOMA CANCER INCIDENCE AND MORTALITY RATE TREND, VA 2006-2015

DATA SOURCE: VIRGINIA CANCER REGISTRY, VA 2011-2015



Lymphocyte-depleted Hodgkin lymphoma. it is a rare form of the disease seen mainly in older people and those with HIV infection. It is more aggressive than other types of HL and likely to be advanced when first found. It is most often in lymph nodes in the abdomen (belly) as well as in the spleen, liver, and bone marrow.

Nodular lymphocyte-predominant Hodgkin lymphoma (NLPHL) accounts for about 5 percent of cases. The cancer cells in NLPHL are large cells called popcorn cells (because they look like popcorn), which are variants of Reed-Sternberg cells; these cells are also called lymphocytic and histiocytic (L&H) cells. NLPHL is a slow growing disease treated differently from the classic types, and is more common in men than in women. NLPHL usually starts in lymph nodes in the neck and under the arm.

Non-Hodgkin Lymphoma (NHL) is a term used for many different types of lymphoma that all share some of the same characteristics, that most often affects adults, but children can get it too. NHL usually starts in lymph nodes or other lymph tissue, but it can sometimes affect the skin.

Treatment for NHL depends on the type. Types of NHL are grouped by which lymphocytes are affected (B cells or T cells), how mature the cells are when they become cancerous, and how fast the cancers grow and spread. The NHL categorized by the latter are either indolent or aggressive lymphomas.

Indolent lymphomas grow and spread slowly. Some indolent lymphomas might not need to be treated right away, but can be watched closely instead. The most common type of indolent lymphoma in the United States is follicular lymphoma.

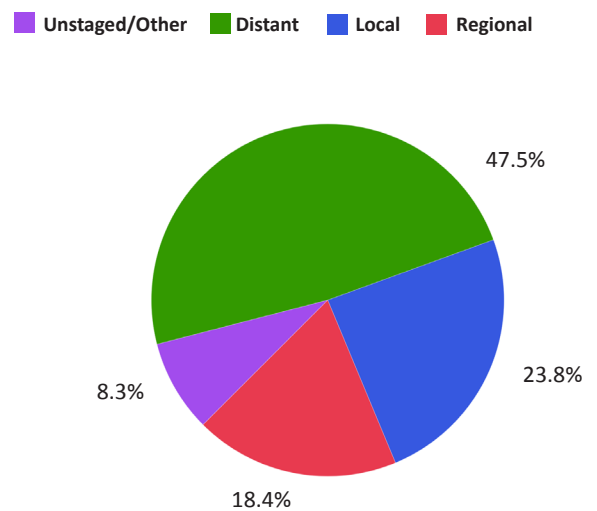
Aggressive lymphomas grow and spread quickly, and usually need to be treated right away. The most common type of aggressive lymphoma in the United States is diffuse large B cell lymphoma (DLBCL).

Some types of lymphoma, like **Mantle Cell lymphoma**, don't fit neatly into either of these categories. Regardless of how fast they grow or spread, all Non-Hodgkin lymphomas can eventually spread to other parts of the body such as the liver, brain, or bone marrow.

There are many different types of non-Hodgkin lymphoma (NHL), so classifying it can be quite confusing (even for doctors). Several different systems have been used, but the most recent system is the **World Health Organization (WHO)** classification. The WHO system groups lymphomas based on the type of lymphocyte the lymphoma starts in, how the lymphoma looks under a microscope, the chromosome features of the lymphoma cells, and the presence of certain proteins on the surface of the cancer cells. When a non-Hodgkin lymphoma starts only in the skin (not in other organs or tissues) it is called a skin lymphoma (or **cutaneous lymphoma**).

Selected Cancer Age Adjusted Rates (per 100,000) for VA Compared to US, 2011-2015			
	Cancer Site	Virginia ⁵	US ⁵
Incidence Rate	Leukemia	9.5	13.8
	non-Hodgkin Lymphoma	16.6	19.4
	Hodgkin Lymphoma	2.4	2.5
Mortality Rate	Leukemia	6.2	6.7
	non-Hodgkin Lymphoma	5.6	5.7
	Hodgkin Lymphoma	0.3	0.3

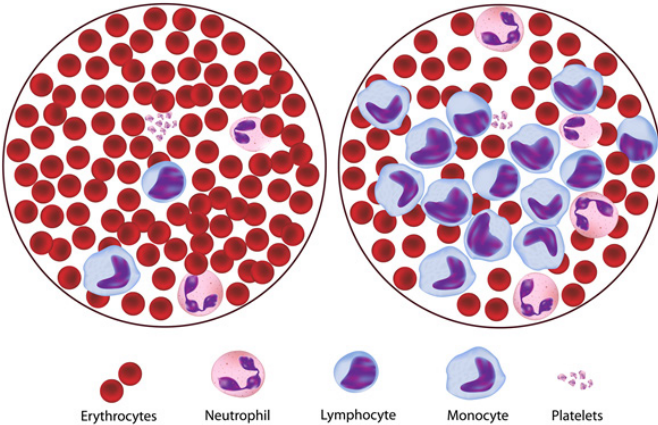
LYMPHOMA CANCER INCIDENCE PERCENTAGE BY DIAGNOSIS STAGE, VA 2011-2015





Normal Blood

Leukemia



UNDERSTANDING LEUKEMIA

Leukemia is a cancer of blood-forming tissues, including the bone marrow and the lymphatic system, hindering the body's ability to fight infection. Many types of leukemia exist such as acute lymphoblastic leukemia, acute myeloid leukemia, and chronic lymphocytic leukemia. Some forms of leukemia are more common in children, while others occur mostly in adults. Leukemia usually involves the white blood cells, which are potent infection fighters, normally growing and dividing in an orderly way, as your body needs them. In people with leukemia, the bone marrow produces abnormal white blood cells that do not function properly.

Many patients with slow-growing types of leukemia do not have symptoms. Rapidly growing types of leukemia may cause symptoms that include fever or chills, fatigue, weight loss (without trying), frequent or severe infections, bone pain or tenderness, recurrent nosebleeds, tiny red spots in skin (petechiae), and easy bleeding or bruising.

Treatment is highly variable. For slow-growing leukemia, treatment may include monitoring. For aggressive leukemia, treatment includes chemotherapy that is sometimes, followed by radiation and stem cell transplant. (Mayo Clinic website) Different types of leukemia have different treatment options and outlooks.

DIFFERENT TYPES OF LEUKEMIA

Acute Lymphocytic Leukemia (ALL) Sometimes called ALL. It starts in the bone marrow, where blood cells are made. It is more common in children than in adults.

Leukemia is the most common cancer in children and teens, accounting for almost 1 out of 3 cancers. Most instances of childhood leukemia are acute lymphocytic leukemia (ALL).

Most of the remaining cases are acute myeloid leukemia (AML). Chronic leukemia is rare in children.

Acute Myeloid Leukemia (AML) Also called acute myelocytic leukemia, acute myelogenous leukemia, acute granulocytic leukemia, acute non-lymphocytic leukemia, or just AML. It is most common in older people.

AML starts in the bone marrow (the soft inner part of certain bones, where new blood cells are made), but in most cases it quickly moves into the blood. It can sometimes spread to other parts of the body including the lymph nodes, liver, spleen, central nervous system (brain and spinal cord), and testicles.

ACUTE LYMPHOCYTIC LEUKEMIA CANCER
AGE ADJUSTED RATE BY AGE GROUP, VA
2011-2015

DATA SOURCE: VIRGINIA CANCER REGISTRY, VA 2011-2015

