

Understanding Hodgkin Lymphoma

Hodgkin lymphoma (HL), also known as Hodgkin disease, represents about 10 percent of all lymphomas. Approximately 8,100 new cases of HL are diagnosed in the United States each year.

HL can occur in both children and adults, but it is most commonly diagnosed in adults. Incidence peaks in young adults between the ages of 20 and 34 years and again in older adults between the ages of 70 and 84 years.

HL is characterized by the presence of very large cells called Reed-Sternberg (RS) cells, although other abnormal cell types may be present. HL usually starts in the lymph nodes; however, it often spreads from one lymph node to another and can also spread to other organs.

Common signs and symptoms of HL include swelling of the lymph nodes (which is often but not always painless), fever, night sweats, unexplained weight loss, itching, and lack of energy. While most people who have these complaints do not have HL, anyone with persistent symptoms should see a physician to make sure that lymphoma is not present.

COMMON TYPES OF HL

HL is divided into two main classifications: classical HL (cHL), which accounts for 93 percent of cases, and nodular lymphocyte-predominant HL. The type of HL a patient has may affect their treatment choices.

CLASSICAL HL

Nodular Sclerosis cHL

Nodular Sclerosis cHL is the most common subtype of HL, accounting for 60 to 80 percent of all cHL cases. In *nodular* (knot-like) sclerosis cHL, the involved lymph nodes contain RS cells mixed with normal white blood cells. The lymph nodes often contain a lot of scar tissue, which is where the name nodular sclerosis (scarring) originates. The disease is more common in women than in men, and it usually affects adolescents and adults under the age of 50 years. The majority of patients are cured with current treatments.

Mixed Cellularity cHL

Mixed Cellularity cHL accounts for about 15 to 30 percent of all HL cases. The disease is found more commonly in men than in women, and it primarily affects older adults. With this type of cHL, the lymph nodes contain many RS cells in addition to several other cell types. More advanced disease is usually present by the time this subtype is diagnosed.

Lymphocyte-Rich cHL

Lymphocyte-Rich cHL accounts for less than five percent of HL cases. The disease may be *diffuse* (spread out) or nodular in form and is characterized by the presence of numerous normal-appearing lymphocytes and classic RS cells. This subtype of HL is usually diagnosed at an early stage in adults and has a low relapse (disease returns after treatment) rate.

Lymphocyte-Depleted cHL

Lymphocyte-Depleted cHL is rarely diagnosed (about 1 percent of all cHL cases). Abundant RS cells and few normal lymphocytes are present in the lymph nodes of patients with this subtype, which is aggressive and usually not diagnosed until it is widespread throughout the body.

LYMPHOCYTE-PREDOMINANT HL

Nodular Lymphocyte-Predominant HL

Nodular Lymphocyte-Predominant HL accounts for seven percent of all HL cases. It affects men more often than women and is usually diagnosed before the age of 35 years. Typical RS cells are usually not found in this subtype, but large, abnormal B cells (sometimes referred to as popcorn cells) can be seen, as well as small B cells, which may be distributed in a nodular pattern within the tissues. This subtype is usually diagnosed at an early stage and is not very aggressive. This form of HL resembles *indolent* (slow-growing) B-cell non-Hodgkin lymphoma (NHL) and is characterized by late recurrences (that is, NHL that has returned after having disappeared for a while).

TREATMENT OPTIONS

The majority of patients with HL can be cured. Most patients treated for HL receive some form of chemotherapy, sometimes followed by radiation therapy, as their first treatment. Standard *frontline* (initial) chemotherapy for HL is ABVD (adriamycin, bleomycin, vinblastine, and dacarbazine) with or without radiation therapy or other agents, depending on the patient's type and stage of HL as well as their overall health status. In 2018, brentuximab vedotin (Adcetris) in combination with chemotherapy was approved by the U.S. Food and Drug Administration (FDA) for frontline treatment of patients with Stage III or IV cHL. Other chemotherapy regimens may

also be recommended by the physician, but not always as initial therapies. ABVD tends to be recommended for Stage I or II disease, but it may also be used to treat more advanced HL. BEACOPP, which includes bleomycin, etoposide, doxorubicin, cyclophosphamide, vincristine, procarbazine, and prednisone, may also be suggested for patients with more advanced-stage disease.

Stem cell transplantation is typically used in the relapsed (disease returns after treatment) or refractory (disease does not respond to treatment) setting. Several other chemotherapy regimens are used to treat patients with relapsed/refractory cHL. Brentuximab vedotin is a *targeted* agent (a therapy that targets protein markers on cancer cells), approved by the FDA for the treatment of relapsed/refractory HL after failure of stem cell transplantation or after failure of two previous chemotherapy regimens in patients who are not eligible for stem cell transplantation, and as a consolidation treatment after *autologous stem cell transplantation* (a patient's own cells are infused after high-dose chemotherapy) in patients with HL who are at high risk of disease relapse or progression. Nivolumab (Opdivo) and pembrolizumab (Keytruda) are immunotherapy drugs (treatments that help promote the body's own immune response) that are approved by the FDA. Nivolumab (Opdivo) is indicated for the treatment of patients with cHL that has relapsed or progressed after autologous stem cell transplantation and posttransplantation brentuximab vedotin. Pembrolizumab (Keytruda) is used for the treatment of adult and pediatric patients with refractory cHL. These agents have been very effective in the relapsed/refractory setting. For more information on relapsed and refractory HL, view the *Hodgkin Lymphoma: Relapsed/Refractory* fact sheet on the Lymphoma Research Foundation's (LRF's) website at lymphoma.org/publications.



TREATMENTS UNDER INVESTIGATION

Although the cure rate in HL is already high (→75% in newly diagnosed patients), research continues to develop more effective therapies with fewer short- and long-term toxicities. Investigators are also looking for ways to treat the minority of patients who are refractory to treatment and those who relapse. Studies for relapsed/refractory HL are looking at new combinations of targeted therapies or immunotherapies including ibrutinib (Imbruvica), lenalidomide (Revlimid), and a different class of drugs called histone deacetylase (HDAC) inhibitors. Clinical trials are also ongoing for the use of ADCT-301 (camidanlumab tesirine) and anti-CD30-CAR (chimeric antigen receptor) T-cell therapy in relapsed/refractory HL.



FOLLOW-UP

Patients with lymphoma should have regular visits with a physician who is familiar with their medical history and the

treatments they have received. Medical tests (such as blood tests and computed tomography [CT]/positron emission tomography [PET] scans) may be required at various times during remission to evaluate the need for additional treatment.

Since HL is a highly curable malignancy mostly affecting young people with long life expectancy, there is a growing number of HL survivors who may have special medical needs such as screening for secondary cancers or monitoring for long-term toxicities of therapy. Additional resources for adolescents and young adults living with cancer are available on LRF's website at lymphoma.org/eraselymphoma.

Patients and their caregivers are encouraged to keep copies of all medical records and test results as well as information on the types, amounts, and duration of all treatments received. This documentation will be important for keeping track of any side effects resulting from treatment or potential disease recurrences. LRF's award-winning Focus On Lymphoma mobile app (lymphoma.org/mobileapp) and Lymphoma Care Plan (lymphoma.org/publications) can help patients manage this documentation.

Clinical Trials Information Service

Clinical trials are crucial in identifying effective drugs and determining optimal doses for patients with lymphoma. Patients interested in participating in a clinical trial should view the Understanding Clinical Trials fact sheet on LRF's website at www.lymphoma.org, talk to their physician, or contact the LRF Helpline for an individualized clinical trial search by calling 800-500-9976 or emailing helpline@lymphoma.org

Education Resources

- In-Person Education Programs
- Focus on Lymphoma Mobile App
- Patient Publications
- Podcasts
- Webinars
- YouTube Videos

Support Services

- Financial Assistance Program
- LRF Helpline
- Lymphoma Support Network
- Stories of Hope

Contact LRF:
Helpline: 800 500 9976
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Supported through grants from:



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