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Treating Hodgkin Lymphoma

If you (or your child) has been diagnosed with Hodgkin lymphoma (HL), the cancer care team will discuss treatment options with you. It's important to think carefully about your choices. You will want to weigh the benefits of each treatment option against the possible risks and side effects.

How is Hodgkin lymphoma treated?

Chemotherapy and radiation therapy are the main treatments for HL. Depending on the case, one or both of these treatments might be used.

Certain patients might be treated with immunotherapy or with a stem cell transplant, especially if other treatments haven't worked. Except for biopsy and staging, surgery is rarely used to treat HL.

- [Chemotherapy for Hodgkin Lymphoma](#)
- [Radiation Therapy for Hodgkin Lymphoma](#)
- [Immunotherapy for Hodgkin Lymphoma](#)
- [High-dose Chemotherapy and Stem Cell Transplant for Hodgkin Lymphoma](#)

Common treatment approaches

Treatment for HL is based largely on the [stage](#)¹ (extent) of the disease. But other factors, including a person's age and general health, and the [type](#)² and location of the lymphoma, might also affect treatment options.

For almost all people with HL, cure is the main goal. But treatment can have side effects, some that don't show up for many years. Because of this, doctors try to choose a treatment plan with the lowest risk of possible side effects.

- [Treating Classic Hodgkin Lymphoma, by Stage](#)
- [Treating Nodular Lymphocyte-Predominant Hodgkin Lymphoma](#)
- [Treating Hodgkin Lymphoma in Children](#)
- [Treating Hodgkin Lymphoma in Pregnancy](#)

Who treats Hodgkin lymphoma?

Based on your treatment options, you might have different types of doctors on your treatment team. These doctors could include:

- A **hematologist**: a doctor who treats blood disorders, including lymphomas.
- A **medical oncologist**: a doctor who treats cancer with medicines such as chemotherapy
- A **radiation oncologist**: a doctor who treats cancer with radiation therapy

You might have many other specialists on your treatment team as well, including physician assistants, nurse practitioners, nurses, nutrition specialists, social workers, and other health professionals.

- [Health Professionals Associated With Cancer Care](#)³

Making treatment decisions

It's important to discuss all treatment options, including their goals and possible side effects, with your doctors to help make the decision that best fits your needs. You may feel that you need to make a decision quickly, but it's important to give yourself time to absorb the information you have learned. Ask your cancer care team questions.

If time permits, it is often a good idea to seek a second opinion. A second opinion can give you more information and help you feel more confident about the treatment plan you choose.

- [What Should You Ask Your Doctor About Hodgkin Lymphoma?](#)⁴
- [Seeking a Second Opinion](#)⁵

Thinking about taking part in a clinical trial

Clinical trials are carefully controlled research studies that are done to get a closer look at promising new treatments or procedures. Clinical trials are one way to get state-of-

the art cancer treatment. In some cases they may be the only way to get access to newer treatments. They are also the best way for doctors to learn better methods to treat cancer. Still, they're not right for everyone.

If you would like to learn more about clinical trials that might be right for you, start by asking your doctor if your clinic or hospital conducts clinical trials.

- [Clinical Trials⁶](#)

Considering complementary and alternative methods

You may hear about alternative or complementary methods that your doctor hasn't mentioned to treat your cancer or relieve symptoms. These methods can include vitamins, herbs, and special diets, or other methods such as acupuncture or massage, to name a few.

Complementary methods refer to treatments that are used along with your regular medical care. Alternative treatments are used instead of a doctor's medical treatment. Although some of these methods might be helpful in relieving symptoms or helping you feel better, many have not been proven to work. Some might even be harmful.

Be sure to talk to your cancer care team about any method you are thinking about using. They can help you learn what is known (or not known) about the method, which can help you make an informed decision.

- [Complementary and Alternative Medicine⁷](#)

Help getting through cancer treatment

People with cancer need support and information, no matter what stage of illness they may be in. Knowing all of your options and finding the resources you need will help you make informed decisions about your care.

Whether you are thinking about treatment, getting treatment, or not being treated at all, you can still get supportive care to help with pain or other symptoms. Communicating with your cancer care team is important so you understand your diagnosis, what treatment is recommended, and ways to maintain or improve your quality of life.

Different types of programs and support services may be helpful, and can be an important part of your care. These might include nursing or social work services, financial aid, nutritional advice, rehab, or spiritual help.

The American Cancer Society also has programs and services – including rides to treatment, lodging, and more – to help you get through treatment. Call our National Cancer Information Center at 1-800-227-2345 and speak with one of our trained specialists.

- [Palliative Care](#)⁸
- [Find Support Programs and Services in Your Area](#)⁹

Choosing to stop treatment or choosing no treatment at all

For some people, when treatments have been tried and are no longer controlling the cancer, it could be time to weigh the benefits and risks of continuing to try new treatments. Whether or not you continue treatment, there are still things you can do to help maintain or improve your quality of life.

Some people, especially if the cancer is advanced, might not want to be treated at all. There are many reasons you might decide not to get cancer treatment, but it's important to talk to your doctors and you make that decision. Remember that even if you choose not to treat the cancer, you can still get supportive care to help with pain or other symptoms.

- [If Cancer Treatments Stop Working](#)¹⁰

The treatment information given here is not official policy of the American Cancer Society and is not intended as medical advice to replace the expertise and judgment of your cancer care team. It is intended to help you and your family make informed decisions, together with your doctor. Your doctor may have reasons for suggesting a treatment plan different from these general treatment options. Don't hesitate to ask him or her questions about your treatment options.

Chemotherapy for Hodgkin Lymphoma

Chemotherapy (chemo) is the use of drugs to kill cancer cells. Chemo is usually injected into a vein under the skin or taken as a pill. Chemo drugs enter the bloodstream and travel throughout the body to reach and destroy cancer cells wherever they may be.

Chemo is the main treatment for most people with Hodgkin lymphoma (other than some people with nodular lymphocyte-predominant Hodgkin lymphoma , or NLPHL). Sometimes chemo is followed by [radiation therapy](#).

Which chemo drugs are used to treat Hodgkin lymphoma?

Chemo for classic Hodgkin lymphoma (cHL) combines several drugs because different drugs kill cancer cells in different ways. The combinations used to treat cHL are often referred to by abbreviations.

ABVD is the most common regimen used in the United States

- Adriamycin[®] (doxorubicin)
- Bleomycin
- Vinblastine
- Dacarbazine (DTIC)

Other common regimens include:

BEACOPP

- Bleomycin
- Etoposide (VP-16)
- Adriamycin (doxorubicin)
- Cyclophosphamide (Cytosan[®])
- Oncovin[®] (vincristine)
- Procarbazine
- Prednisone

Stanford V

- Doxorubicin (Adriamycin)
- Mechlorethamine (nitrogen mustard)
- Vincristine
- Vinblastine
- Bleomycin
- Etoposide
- Prednisone

Radiation is given after chemo in the Stanford V regimen. It's sometimes given after the ABVD or BEACOPP regimens, too.

Other chemo combinations can also be used for HL. Most use some of the same drugs listed above, but they might include different combinations and be given on different schedules.

Chemo is given in cycles that include a period of treatment followed by a rest period to give the body time to recover. In general, each cycle lasts for several weeks.

Most chemo treatments are given in the doctor's office, clinic, or hospital outpatient department, but some may require a hospital stay.

Possible side effects of chemotherapy

Chemo drugs can cause side effects . These depend on the type and dose of drugs given and how long treatment lasts. Common short-term [side effects](#)¹ include:

- Hair loss
- Mouth sores
- Loss of appetite
- [Nausea and vomiting](#)²
- Diarrhea
- Increased chance of [infection](#)³ (from having too few white blood cells)
- Easy bruising or bleeding (from having too few blood platelets)
- [Fatigue](#)⁴ (from having too few red blood cells)

These side effects are usually short-lived and go away over time after treatment ends. If serious side effects occur, chemo may have to be delayed or the doses reduced.

Be sure to tell your doctor or nurse if you do have side effects. There are often ways to help with them. For instance, drugs are often used to help prevent nausea and vomiting.

Late or long-term side effects: Some chemo drugs can have long-lasting side effects. Some of these might not occur until months or even years after treatment has ended. For example:

- Doxorubicin can damage the heart, so your doctor may order tests to check your heart function before and during treatment with this drug.

- Bleomycin can damage the lungs, so some doctors order tests of lung function (called pulmonary function tests) before starting patients on this drug.
- Some chemo drugs can increase the risk of getting a [second type of cancer](#)⁵ later in life (such as leukemia), especially in patients who also get radiation therapy.
- In children and young adults, some chemo drugs can also affect body growth and [fertility](#)⁶ (ability to have children) later on.

Long-term effects are discussed in more detail in [Living As a Hodgkin Lymphoma Survivor](#)⁷.

Before starting chemo, ask your doctor to explain possible side effects and your chances of having them. Also ask what you can do to help prevent them.

To learn more, see [Chemotherapy](#)⁸.

Hyperlinks

1. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects.html
2. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/nausea-and-vomiting.html
3. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/low-blood-counts/infections.html
4. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/fatigue.html
5. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/second-cancers-in-adults.html
6. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/fertility-and-sexual-side-effects.html
7. www.cancer.org/cancer/hodgkin-lymphoma/after-treatment/follow-up.html
8. www.cancer.org/treatment/treatments-and-side-effects/treatment-types/chemotherapy.html

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Radiation Therapy for Hodgkin

Lymphoma

Radiation therapy uses high-energy rays (or particles) to destroy cancer cells. Radiation therapy is part of the treatment for most people with Hodgkin lymphoma (HL). It's especially useful when HL is only in one part of the body.

For **classic Hodgkin lymphoma**, radiation is often given after [chemotherapy](#), especially when there's a large or bulky tumor mass (usually in the chest). Chemotherapy or radiation alone would probably not cure the lymphoma, but both treatments together usually do.

Radiation therapy can also be used by itself to treat some cases of **nodular lymphocyte-predominant Hodgkin lymphoma (NHLPL)**.

Radiation therapy is often very good at killing HL cells. But over the years as it has become clear that chemotherapy also works very well. Today, doctors tend to use less radiation and lower doses of radiation because of its possible long-lasting side effects. (See below.)

How is radiation therapy given?

To treat HL, carefully focused beams of radiation are delivered from a machine. This is called **external beam radiation**.

Before treatments start, the radiation team takes careful measurements to determine the angles for aiming the radiation beams and the dose needed. This planning session, called simulation, usually includes getting [imaging tests](#)¹ such as CT or PET scans. Casts, body molds, and head rests may be made to hold you in the same position for each treatment. Blocks or shields may be made to protect other parts of your body. You may be asked to hold your breath for a short time. The goal is to focus the radiation on the cancer to limit the affect on healthy tissues.

Most often, radiation treatments are given 5 days a week for several weeks. The treatment is a lot like getting an x-ray, but the radiation is stronger. Each treatment lasts only a few minutes, though the setup time – getting you or your child into place – usually takes longer. The treatment is painless, but some younger children might still need to be sedated to make sure they don't move during the treatment. Modern imaging tests can pinpoint the sites of HL very precisely, which helps doctors aim the radiation only at the lymphoma while sparing nearby normal tissues. This can help limit side effects.

Remember: Lymph nodes are scattered all over your body and Hodgkin lymphoma can start in any of them. This means the cancer is often near key organs, like the lungs, heart, kidneys, and spinal cord, as well as muscles, blood vessels, and nerves. It's important to focus radiation on the lymph nodes to limit damage to nearby healthy tissues.

Involved site radiation therapy (ISRT)

Many doctors prefer this newer approach to radiation therapy when treating HL. In ISRT, the radiation is aimed only at the lymph nodes that originally contained lymphoma, as well as any nearby areas the cancer extended into. This shrinks the size of the treatment area (or field) and helps spare nearby normal tissues and organs from getting radiation.

Involved field radiation therapy (IFRT)

This was the preferred form of radiation therapy for HL in the past, but it's now largely being replaced by ISRT. In this technique, only the lymph node **regions** that have HL are treated, but this includes larger treatment areas than ISRT does. (This can increase the risk of radiation reaching nearby organs.)

Extended field radiation

This is rarely done today, but radiation used to be given to the major lymph node areas that contained lymphoma, as well as the surrounding normal lymph node areas. This was done just in case the lymphoma had spread, even though the doctors could not actually detect it in these areas. This is called extended field radiation.

- If the lymphoma was in the upper body, radiation was given to the **mantle field**, which included lymph node areas in the neck, chest, and under the arms. Sometimes this was extended to also include lymph nodes in the upper abdomen (belly).
- **Inverted Y field** radiation therapy included the lymph nodes in the upper abdomen, the spleen, and the lymph nodes in the pelvis.
- When inverted Y field radiation was given together with mantle field radiation, the combination was called **total nodal irradiation**.

Because nearly all patients with HL are now treated with chemotherapy, extended field

radiation is seldom used any more.

Total body irradiation

People who are getting a stem cell transplant may get radiation to the whole body along with high-dose chemotherapy, to try to kill lymphoma cells throughout the body. For more information on this, see [High-dose Chemotherapy and Stem Cell Transplant](#).

Possible side effects of radiation therapy

The [side effects](#)² of radiation therapy depend on where the radiation is aimed.

Some possible short-term effects include:

- Skin changes in areas getting radiation, ranging from redness to blistering and peeling
- Feeling tired
- Dry mouth
- Nausea
- Diarrhea

Radiation given to several areas, especially after chemotherapy, can lower blood cell counts and increase the risk of infections.

Radiation therapy can also have long-lasting effects, including:

- An increased risk of **another cancer** in the part of the body that was exposed to radiation.
- Damage to the **thyroid gland** (from radiation to the chest or neck), which can affect its ability to make thyroid hormone. This can lead to fatigue and weight gain.
- An increased risk of **heart disease** (such as heart attacks) and **lung problems** from radiation to the chest
- An increased risk of **stroke** years later after radiation to the neck
- **Slowed bone growth in children**. Depending on where the radiation is given, this could cause deformities or cause a child to not grow to their full height. Radiation to the lower part of the body in children and young adults could also affect **fertility** later in life.

To reduce the risk of side effects, doctors carefully calculate the exact dose of radiation needed and aim the radiation beams as accurately as they can. Shields might also be placed over nearby parts of the body to protect them from the radiation. To help preserve fertility in girls and young women, the ovaries might be moved out of the way with minor surgery before radiation is given.

For more information, see [Late and Long-term Side Effects of Hodgkin Lymphoma Treatment](#)³. If you or your child is getting radiation therapy, be sure to talk to your doctor about the possible long-term side effects. Hodgkin lymphoma can be cured and long-term side effects are a very real concern.

To learn a lot more about radiation, see [Radiation Therapy](#)⁴.

Hyperlinks

1. www.cancer.org/treatment/understanding-your-diagnosis/tests/imaging-radiology-tests-for-cancer.html
2. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects.html
3. www.cancer.org/cancer/hodgkin-lymphoma/after-treatment/lifestyle-changes.html
4. www.cancer.org/treatment/treatments-and-side-effects/treatment-types/radiation.html

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Immunotherapy for Hodgkin Lymphoma

Immunotherapy is the use of medicines to help someone's immune system better recognize and destroy cancer cells. Immunotherapy can be used to treat some people with Hodgkin lymphoma (HL).

Monoclonal antibodies

Antibodies are proteins made by your immune system to help fight infections. Man-made versions, called **monoclonal antibodies** (mAbs), can be designed to attack a specific target, such as a substance on the surface of lymphocytes (the cells in which HL starts). This means these treatments attack cancer cells, but ignore normal cells that don't have the target substance. This reduces damage to normal, healthy cells. Some mAbs are now being used to treat HL.

Brentuximab vedotin (Adcetris®)

Classic Hodgkin lymphoma (cHL) cells usually have the CD30 molecule on their surface. Brentuximab vedotin is an anti-CD30 antibody attached to a chemo drug. The antibody part of brentuximab acts like a homing signal, bringing the chemo drug to the lymphoma cells with CD30 on them. The drug enters the cells and kills them when they try to divide into new cells.

Brentuximab may be used along with chemo as the first treatment for stage III or IV. It

has also been shown to help many people with cHL that has come back after other treatments, including a [stem cell transplant](#). It's helped people are not well enough to have a transplant, as well as those with cHL that's not responding to other treatments. (This is called **refractory** disease.) It can be given alone or along with [chemotherapy](#).

Brentuximab may also be used alone for 1 year after transplant for people at high-risk of recurrence (cancer coming back after treatment).

Brentuximab is infused into a vein (IV), usually every 3 weeks. Common [side effects](#)¹ include:

- Nerve damage (neuropathy)
- Low blood cell counts
- Fatigue
- Fever
- Nausea and vomiting
- Infections
- Diarrhea

Rarely, serious side effects occur during IV infusions, such as trouble breathing and low blood pressure

Rituximab (Rituxan[®])

Rituximab may be used to treat nodular lymphocyte-predominant Hodgkin lymphoma (NLPHL) . This mAb attaches to a substance called CD20 found on some types of lymphoma cells and kills the lymphoma cell. It's often given along with chemotherapy and/or [radiation therapy](#).

Rituximab is given as an IV infusion in the doctor's office or clinic. When it's used by itself, it's usually given once a week for 4 weeks, which may then be repeated several months later. When it's given along with chemotherapy, it's most often given on the first day of each chemo cycle.

Common side effects are usually mild but can include:

- Chills
- Fever
- Nausea
- Rashes

- Fatigue
- Headaches

Rarely, more severe side effects occur during infusions, such as trouble breathing and low blood pressure. You will be given medicines before each treatment to help keep this from happening. But even if these symptoms do occur during the first infusion, it's unusual for them to happen again with later doses.

Rituximab can cause prior hepatitis B infections to become active again, which sometimes leads to severe liver problems or even death. Your doctor will probably check your blood for signs of hepatitis before starting this drug.

Rituximab can also increase your risk of infection for several months after the drug is stopped.

Immune checkpoint inhibitors

An important part of the immune system is its ability to keep itself from attacking normal cells in the body. To do this, it uses “checkpoints” – molecules on immune cells that need to be turned on (or off) to start an immune response. Cancer cells sometimes use these checkpoints to avoid being attacked by the immune system. Drugs that target these checkpoints hold a lot of promise as cancer treatments.

Nivolumab (Opdivo®) and **pembrolizumab (Keytruda®)** are checkpoint inhibitors that can be used in people with classic Hodgkin lymphoma whose cancer has grown during treatment (called refractory cancer) or returned after other treatments have been tried (called recurrent cancer).

These drugs target PD-1, a protein found on immune system cells called T cells. PDL-1 is a protein found on healthy cells. When PD-1 “sees” PDL-1 it's like an “off switch” that keeps the T cells from attacking healthy cells in the body. Lymphoma cells also can have a lot of PDL-1 protein on them. This helps them “turn off” the immune system. By blocking this PD-1 and PDL-1 pathway, these drugs allow the immune system to find and kill the lymphoma cells. This can shrink some tumors or slow their growth.

These drugs are given as an intravenous (IV) infusion, typically every 2 or 3 weeks.

Possible side effects

Side effects of these drugs can include:

- Fatigue
- Fever
- Cough
- Nausea
- Itching
- Skin rash
- Loss of appetite
- Joint pain
- Constipation
- Diarrhea

Other, more serious side effects occur less often. These drugs work by basically removing the brakes on the body's immune system. Sometimes the immune system starts attacking other parts of the body, which can cause serious or even life-threatening problems in the lungs, intestines, liver, hormone-making glands, kidneys, or other organs.

If you notice any problems, you should tell your health care team about it right away. If serious side effects do occur, treatment may need to be stopped and you may get high doses of steroids to suppress your immune system.

Hyperlinks

1. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects.html

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High-dose Chemotherapy and Stem Cell Transplant for Hodgkin Lymphoma

Stem cell transplants (SCTs) are sometimes used for hard-to-treat Hodgkin lymphoma, such as disease that doesn't go away completely after chemotherapy (chemo) and/or radiation or lymphoma that comes back after treatment.

The doses of chemo drugs given to patients normally are limited by the [side effects](#)¹ these drugs cause. Higher doses can't be used, even if they might kill more cancer cells, because they would severely damage the bone marrow, where new blood cells are made.

A stem cell transplant lets doctors give higher doses of chemo (sometimes along with radiation therapy). This is because after getting high-dose chemo, the patient receives a transplant of blood-forming stem cells to rebuild the bone marrow.

The blood-forming stem cells used for a transplant can come either from the blood or from the bone marrow. Today, most transplants are done with cells that are taken out of the blood and are called **peripheral stem cell transplants**.

Types of transplants

There are 2 main types of stem cell transplants. They use different sources of blood-forming stem cells.

- In an **autologous stem cell transplant**, a patient's own blood stem cells are collected several times in the weeks before treatment. The cells are frozen and stored while the person gets treatment (high-dose chemo and/or radiation) and then are given back into the patient's blood by an IV. This is the most common type of transplant for Hodgkin lymphoma.
- In an **allogeneic stem cell transplant**, the blood stem cells come from someone else. Usually this is a brother or sister, but the source could be an unrelated donor or umbilical cord blood. The donor's tissue type (also known as the HLA type) needs to match the patient's tissue type as closely as possible to help prevent major problems with the transplant. Usually, in treating Hodgkin lymphoma, an allogeneic transplant is used only if an autologous transplant has already been tried without success.

A stem cell transplant is a complex treatment that can cause life-threatening side effects. If the doctors think a person might benefit from a transplant, it should be done at a cancer center where the staff has experience with the procedure and with managing the recovery phase.

See [Stem Cell Transplant for Cancer](#).²

Hyperlinks

1. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects.html
2. www.cancer.org/treatment/treatments-and-side-effects/treatment-types/stem-cell-transplant.html

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Treating Classic Hodgkin Lymphoma, by Stage

This section sums up the treatment options for Hodgkin lymphoma (HL) in adults, based on the stage of cancer. Treatment of the disease in children is slightly different from the treatment used for adults. Some of these differences are discussed in [Treating Hodgkin Lymphoma in Children](#). For teens with HL who are fully grown, the treatment is usually the same as that for an adult.

Treatment options depend on many factors, including:

- The [type](#)¹ of HL
- The [stage](#)² (extent) of the HL
- Whether or not the disease is bulky (large)
- Whether the disease is causing [B symptoms](#)³
- Results of blood tests and other lab tests
- A person's age
- A person's overall health
- Personal preferences

Based on these factors, a person's treatment might be a little different from the general outline below.

Most experts agree that treatment in a clinical trial should be considered for HL that is resistant to treatment or comes back (relapses) after treatment.

Stages IA and IIA, favorable

This group includes HL that is only on one side of the diaphragm (above or below) and that doesn't have any unfavorable factors. For example:

- It's not [bulky](#)⁴
- HL is in less than 3 different lymph node areas
- It doesn't cause any of the B symptoms
- The ESR (erythrocyte sedimentation rate) is not elevated

Treatment for most patients is chemotherapy (usually 2 to 4 cycles), followed by

radiation to the initial site of the disease (ISRT or involved site radiation therapy). Another option is chemotherapy alone (usually for 4 or 6 cycles) in selected patients.

Doctors often order a PET/CT scan after a few courses of chemo to see how well the treatment is working and to determine how much more treatment (if any) is needed.

If a person can't have chemotherapy because of other health issues, radiation therapy alone may be an option.

For those who don't respond to treatment, chemotherapy using different drugs or high-dose chemotherapy (and possibly radiation) followed by a stem cell transplant may be recommended. Treatment with the monoclonal antibody brentuximab vedotin (Adcetris[®]) may be another option. If this isn't helpful, treatment with an immune checkpoint inhibitor might be useful.

Stages I and II, unfavorable

This group includes HL that is only on one side of the diaphragm (above or below), but has 1 or more of these adverse risk factors:

- It's bulky (the tumor is large)
- HL is in 3 or more different areas of lymph nodes
- There's cancer outside the lymph nodes (called extranodal involvement)
- It's causing B symptoms
- The ESR (erythrocyte sedimentation rate) is high

Treatment is generally more intense than that for favorable disease. It typically starts with chemotherapy (usually ABVD for 4 to 6 cycles or other regimens such as 3 cycles of Stanford V).

PET/CT scans are often done after several cycles of chemo to see if (and how much) more treatment is needed. This is often followed by more, and maybe different, chemo. Radiation therapy (involved field radiation therapy or IFRT) is usually given to the sites of the tumor at this point, especially if it was bulky disease.

For those who don't respond to treatment, chemotherapy using different drugs or high-dose chemotherapy (and possibly radiation) followed by a stem cell transplant may be recommended. Treatment with the monoclonal antibody brentuximab vedotin may be another option. If this isn't helpful, treatment with an immune checkpoint inhibitor might be useful.

Stages III and IV, advanced-stage disease

This includes HL that is both above and below the diaphragm and/or has spread widely through one or more organs outside the lymph system.

Doctors generally treat these stages with chemotherapy using more intense regimens than that used for earlier stages. The ABVD (for at least 6 cycles) regimen is often used, but some doctors favor more intense treatment with the Stanford V regimen for 3 cycles, or up to 8 cycles of the BEACOPP regimen if there are several unfavorable prognostic factors.

PET/CT scans might be used during or after chemo to assess how much more treatment you need. Depending on the results of the scans, more chemo may be given. Radiation therapy may be given after chemo, especially if there were any large tumor areas.

For those whose HL doesn't respond to treatment, chemo using different drugs or high-dose chemotherapy (and possibly radiation) followed by a stem cell transplant may be recommended. Treatment with the monoclonal antibody brentuximab vedotin may be another option. If this isn't helpful, an immunotherapy drug such as nivolumab (Opdivo[®]) or pembrolizumab (Keytruda[®]) might be useful.

Resistant Hodgkin lymphoma

Treatment for HL should remove all traces of the lymphoma. After treatment, the doctor will do tests such as PET/CT scans to look for any signs of HL. If HL is still there, most experts think that more of the same treatment is unlikely to cure it.

Sometimes, radiation therapy to an area of disease that remains after chemotherapy might be curative. Using a different combination of chemo drugs is another option. If radiation alone was the initial treatment, using chemo (with or without more radiation) might also be curative.

If HL is still there after these treatments, but it is responding to treatment, most doctors would recommend high-dose chemo (and possibly radiation) followed by an autologous stem cell transplant, if it can be done. If cancer still remains after this, an allogeneic stem cell transplant may be an option.

Another option, either instead of or after a stem cell transplant, may be treatment with the monoclonal antibody brentuximab vedotin (Adcetris). If this isn't helpful, immunotherapy might be useful.

Recurrent or relapsed Hodgkin lymphoma

If HL comes back (recurs) after treatment, further treatment depends on where the lymphoma comes back, on how long it has been since the initial treatment, and on what the initial treatment was.

If the initial treatment was radiation therapy alone, chemotherapy is usually given for [recurrent disease](#)⁵.

If chemotherapy without radiation therapy was used first, and the cancer comes back only in the lymph nodes, radiation to the lymph nodes can be done, with or without more chemo. Chemo with different drugs may be another option.

Radiation usually cannot be repeated in the same area. If, for example, HL in the chest was treated with radiation and it comes back in the chest, it usually can't be treated with more radiation to the chest. This holds true no matter how long ago the radiation was first given.

If the lymphoma returns after many years, using the same or different chemo drugs (possibly along with radiation) might still cure it. On the other hand, HL that recurs soon after treatment may need more intensive treatment. For example, if the HL has returned within a few months of the original treatment, high-dose chemo (and possibly radiation) followed by an autologous stem cell transplant may be recommended.

If the HL still remains after an autologous transplant, an allogeneic stem cell transplant may be an option. Another option, either instead of or after a stem cell transplant, may be treatment with the monoclonal antibody brentuximab vedotin (Adcetris). If this isn't helpful, an immunotherapy drug such as nivolumab (Opdivo) or pembrolizumab (Keytruda) might be useful.

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Hyperlinks

1. www.cancer.org/cancer/hodgkin-lymphoma/about/what-is-hodgkin-disease.html
2. www.cancer.org/cancer/hodgkin-lymphoma/detection-diagnosis-

- [staging/staging.html](#)
3. www.cancer.org/cancer/hodgkin-lymphoma/detection-diagnosis-staging/signs-and-symptoms.html
 4. www.cancer.org/cancer/hodgkin-lymphoma/detection-diagnosis-staging/staging.html
 5. www.cancer.org/treatment/survivorship-during-and-after-treatment/understanding-recurrence.html

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Treating Nodular Lymphocyte-Predominant Hodgkin Lymphoma

Nodular lymphocyte-predominant Hodgkin lymphoma (NLPHL) is a rare type of Hodgkin lymphoma (HL) that tends to grow more slowly than classic HL (cHL). It's often treated differently.

For people with early-stage NLPHL without any [B symptoms](#)¹, involved site radiation therapy (ISRT) is often all that's needed. Another option for some people might be to have the lymphoma watched closely at first, and then start treatment when symptoms appear.

If **early-stage NLPHL** is [bulky \(large\)](#)² or is causing [B symptoms](#)³, the main treatment is usually chemotherapy followed by radiation therapy (ISRT). Many doctors use the ABVD chemo regimen, but some doctors prefer others. The monoclonal antibody rituximab (Rituxan[®]) might be given along with the chemotherapy. See immunotherapy for Hodgkin lymphoma for more on rituximab.

If the **NLPHL is more advanced (stage III or IV)**, chemotherapy, with or without radiation therapy (ISRT) and/or rituximab, is likely to be recommended. Some patients without B symptoms might be given rituximab alone.

Chemotherapy drugs used for NLPHL

Chemo for NLPHL is not always the same as that used for cHL, though it also combines several drugs because different drugs kill cancer cells in different ways. The combinations used to treat NLPHL are often referred to by abbreviations. Here are the most common combos used in the US. Rituximab can be added to any of them.

ABVD (also used for cHL)

- Adriamycin[®] (doxorubicin)
- Bleomycin
- Vinblastine
- Dacarbazine (DTIC)

CHOP

- Cyclophosphamide (Cytosan[®])
- Doxorubicin
- Vincristine (Oncovin[®])
- Prednisone

CVP

- Cyclophosphamide
- Vinblastine
- Prednisone

See [Chemotherapy for Hodgkin Lymphoma](#) to learn more. For more general information, see [Chemotherapy](#)⁴.

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Hyperlinks

1. www.cancer.org/cancer/hodgkin-lymphoma/detection-diagnosis-staging/signs-and-symptoms.html
2. www.cancer.org/cancer/hodgkin-lymphoma/detection-diagnosis-staging/staging.html
3. www.cancer.org/cancer/hodgkin-lymphoma/detection-diagnosis-staging/signs-and-symptoms.html
4. www.cancer.org/treatment/treatments-and-side-effects/treatment-types/chemotherapy.html

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Treating Hodgkin Lymphoma in Children

Treatment of Hodgkin lymphoma (HL) in children is slightly different from the treatment for adults. As for adults, the main goal in treating HL in children is to cure the lymphoma without causing long-term problems. Doctors adjust the treatment based on the child's age, the extent of the lymphoma, how well the lymphoma is responding to treatment, and other factors.

If the child is past puberty and muscles and bones are fully developed, treatment is usually the same as that given to adults. But if the child has not reached his or her full body size, chemotherapy (chemo) will likely be favored over radiation therapy. This is because radiation can affect bone and muscle growth and keep children from reaching their normal size.

Children's bodies tend to tolerate chemotherapy better in the short term than adults do. But some side effects are more likely to occur in children. Because some of these [side effects could be long-term](#)¹, and because there could be late effects, children who survive cancer need careful attention for the rest of their lives.

Since the 1960s, most children and teens with cancer have been treated at special centers designed for them. Being treated in these centers offers the advantage of having a team of specialists who are experienced with the differences between adult

and childhood cancers, as well as the unique needs of children with cancer and their families. This team usually includes pediatric oncologists, surgeons, radiation oncologists, pathologists, pediatric oncology nurses, and nurse practitioners.

Childhood cancer centers also have psychologists, social workers, child life specialists, nutritionists, rehabilitation and physical therapists, and educators who can support the entire family.

Most children with cancer in the United States are treated at a center that's a member of the Children's Oncology Group (COG) . All of these centers are associated with a university or children's hospital. As we have learned more about treating childhood cancer, it has become even more important that treatment be given by experts in this area.

In these centers, doctors treating children with HL often use treatment plans that are part of [clinical trials](#)². The purpose of these studies is to find the best treatments that cause the fewest side effects.

Any time a child or teen is diagnosed with cancer, it affects every family member and nearly every aspect of the family's life. You can read more about coping with these changes in [Children Diagnosed With Cancer: Dealing With Diagnosis](#)³.

Treating classic Hodgkin lymphoma in children

When treating children with classic Hodgkin lymphoma (cHL), doctors often combine chemo with low doses of radiation. The chemo often includes combinations of many drugs rather than just the usual adult ABVD regimen, especially for cancers that have unfavorable features or are more advanced. This approach has had excellent success rates, even for children with more advanced disease.

Stages IA and IIA, favorable

Treatment generally starts with chemo alone, used at the lowest dose that's likely to result in a cure. PET scans may be used to see if the treatment is working and/or if there's any lymphoma left in the body. If the HL doesn't go away completely, radiation therapy or more chemo might be needed.

Studies have suggested that HL in children can be cured without using radiation. This avoids the long-term problems it can cause. But, **if radiation therapy is used, the dose and area treated are kept as small as possible**. If radiation is used on the lower part of the body in girls and young women, the ovaries should be protected to help

[preserve fertility](#)⁴.

Stages I and II, unfavorable

Treatment is likely to consist of more intense chemo combined with radiation therapy, but the dose and field of radiation are still kept as small as possible.

Stages III and IV

Treatment includes more intense chemo, either alone or combined with low-dose radiation therapy to areas with bulky disease (areas that contain a lot of lymphoma).

Treating nodular lymphocyte-predominant Hodgkin lymphoma in children

Nodular lymphocyte-predominant Hodgkin lymphoma (NLPHL) is very rare in children. There's no single best treatment, and treatments used are often much like those used to [treat cHL](#) and/or those used to [treat adult NLPHL](#). There is one exception: In the early stages of NLPHL in children, surgery to remove the affected lymph node may be the only treatment needed. After surgery, these children are watched closely for signs of lymphoma. Chemo can be used if it comes back.

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Hyperlinks

1. www.cancer.org/treatment/children-and-cancer/when-your-child-has-cancer/late-effects-of-cancer-treatment.html
2. www.cancer.org/treatment/treatments-and-side-effects/clinical-trials.html
3. [/content/cancer/en/treatment/children-and-cancer/when-your-child-has-cancer/dealing-with-diagnosis.html](http://content.cancer/en/treatment/children-and-cancer/when-your-child-has-cancer/dealing-with-diagnosis.html)
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Treating Hodgkin Lymphoma in Pregnancy

If a woman is pregnant and diagnosed with Hodgkin lymphoma (HL), treatment options depend on several factors. The woman and her doctors (including her obstetrician) must think about the extent or stage of the lymphoma, how quickly it's growing, how far along the pregnancy is, and the woman's own personal preferences.

If the HL needs to be treated during the pregnancy, it's delayed until after the first trimester, if possible. This is because the risks to the baby are lower after the first 3 months. Treatment is usually chemotherapy using either one or a few drugs (often the ABVD combo), based on each case.

If HL is [diagnosed](#)¹ during the second half of the pregnancy and isn't causing problems, a woman can often wait until the baby is born before starting treatment. This approach is safest for the baby. (Sometimes labor is induced a few weeks early and treatment is started right away.)

Radiation therapy is not often given during pregnancy because of concerns about the possible long-term effects on the unborn baby. Not all experts agree, but some say that as long as very careful precautions are taken to aim the radiation precisely, limit the doses, and shield the baby, pregnant women with HL in lymph nodes in the neck, underarm area, or inside the chest can get radiation with little or no apparent risk to the baby. If radiation is given, it should be delayed until at least the second trimester, if possible. To date, studies haven't found that delaying radiation treatment is harmful for the mother.

The need to avoid radiation also limits which imaging tests can be used to help determine the [stage²](#) (extent) of the lymphoma and see if treatment is working. CT scans, PET scans, and x-rays all use radiation, so they're avoided if at all possible. MRI scans and ultrasound can be used instead.

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1. www.cancer.org/cancer/hodgkin-lymphoma/detection-diagnosis-staging/how-diagnosed.html
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